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THE OHIO RIVER BASIN

The Regional Water and Land Resources Plan

January 1979

And Environmental, Economic and Social Impact Statements

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OHIO RIVER BASIN COMMISSION

Suite 208-20
Cincinnati, Ohio 45202
36 East Fourth Street
513/684-3831 (FTS)

January 25, 1979

Honorable Cecil D. Andrus, Chairman
Water Resources Council
2120 L Street, NW
Washington, DC 20037

Dear Mr. Chairman:

Pursuant to Section 204(3) of the Water Resources Planning Act of 1965 (PL 89-80), enclosed is "The Ohio River Basin, The Regional Water and Land Resources Plan". This is the overall summary and analysis Report of the Comprehensive Coordinated Joint Plan (CCJP) for the Ohio River Region. The entire Report constitutes the EIS for this aspect of the CCJP as required by Section 102(2)(c) of the National Environmental Policy Act of 1969 (PL 91-190).

The Commission's CCJP consists of 15 volumes -- one for each of the 14 subregions of the Ohio River Basin, and an overall summary and analysis document. Please note that specific project recommendations are generally not included in this document, but rather included in the individual subregional reports of the CCJP that have been transmitted for the formal 90-day review as they were developed.

The enclosed report describes the major regional policy issues, needs and problems and how well the Commission's plan addresses these aspects of the entire Ohio River Basin's water and related land resources. While the focus of the plan is on the region, it provides national and interregional perspective through discussion of how the plan supports national policy, goals and objectives and by describing how plan recommendations impact and otherwise compare to national problems and practices. The identification and description of the cumulative quantitative and qualitative environmental, social and economic impacts that will result from implementing the overall plan are presented at a level of detail consistent with the availability of information and with the Commission's intent of this overall summary and analysis document. In addition, insofar as the Commission can agree, the regional plan includes a list of general and water resource specific regional planning goals.

The Governor of each State and the Head of each federal department or agency and each interstate compact for which a member of the Commission has been appointed has provided views, comments, and recommendations on the Report/ EIS. All of these views, comments, and recommendations have been bound and attached to the Report/EIS. Also included are comments received from the Citizens' Advisory Council to the ORBC. The comments did not recommend changes in the recommended plan.

Please keep me informed of all Water Resources Council action related to this Report/EIS so that I may keep the Commission members informed of the status. This is particularly important to both state and federal members who may be questioned during appropriation and authorization hearings.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander

Frank M. Alexander
Vice-Chairman

SUMMARY OF EIS

Ohio River Basin Recommended Plan 1/25/79

( ) Draft (X) Final Environmental Statement

Responsible Office: Ohio River Basin Commission
36 E. Fourth St., Suite 208
Cincinnati, OH 45202
Phone: (513) 684-3831

1. Name of Action:

(X) Administrative ( ) Legislative

2. **Compliance with NEPA:** "THE OHIO RIVER BASIN - THE REGIONAL WATER AND LAND RESOURCES PLAN" has been prepared in a manner that serves as a plan report and also constitutes an Environmental Impact Statement as required by Section 102(2)(c) of the National Environmental Policy Act (PL 91-190). The EIS summarized here identifies the net impacts of the actions recommended in the plan as a whole. This document is an overall summary and analysis of the plan for the basin as presented in 15 volumes (this summary and one for each subregional portion of the basin). Contained in this summary and analysis document are the generalized recommendations and Commission strategy for meeting identified needs and problems. Individual specific recommendations are included in the 14 subregional portions. Each specific recommendation contained therein requiring federal funds will have a more detailed environmental assessment prepared by the appropriate agency prior to implementation, and an environmental impact statement will be prepared when required.

3. **Description of Action:** The recommended plan consists of 1,233 projects including 96 PL-566 watershed and RC&D projects, three navigation projects, seven reservoir projects, 45 local flood protection projects, 793 municipal water quality control measures, 107 recreation areas, nine state wild and scenic rivers, 102 natural areas, 69 fish and wildlife areas, and two hydroelectric power projects. Also included in the plan, but not reflected in these numbers, are programmatic recommendations for agriculture/forest land treatment, flood plain management, and energy development. In addition, state programmatic recommendations have been made for acid mine drainage control and for Land and Water Conservation Fund cost sharing.

4. A. **Beneficial Environmental Effects:** The measures for water quality, land treatment, and water conservation will enhance the overall environment of the basin. Areas of significant environmental quality will be preserved by recommended scenic rivers, natural areas, and fish and wildlife projects.

B. **Adverse Environmental Effects:** In general, the unavoidable effects associated with implementation of the plan include biological degradation and inundation of free-flowing stream reaches and loss of significant acreages of forest, cropland, pasture land, and rural residential land at impoundment sites. Some of the proposed stream channel modifications would have long-term adverse effects on stream fishery, wildlife, and aesthetics.

C. **Net Environmental Effects:** Considering the beneficial and adverse environmental effects which will result through implementation of the plan, the overall environment of the basin will be enhanced, economic development will continue, and the overall social well-being of the people of the basin will be improved. The total capital costs of implementing the plan recommendations is estimated at $9.2 billion, 80 percent of which represents the cost of municipal wastewater treatment facility improvements, acid mine drainage abatement, and agricultural/forest land treatment and environmental preservation measures.

5. **Alternatives:** A systematic consideration of functional water and related land needs and problems, resources available, and known alternative solutions was conducted as part of the development of the 14 subregional portions of the plan for the basin. Alternative uses of the resources and alternative project types were considered in this analysis. The details of alternative project designs were not analyzed and will be developed and analyzed in the individual detailed project studies and EIS's developed by the implementing agency. It is expected that this process will provide for the best environmentally acceptable project.

6. **Draft EIS Comments Requested From:**

State of Illinois
State of Indiana
Commonwealth of Kentucky
State of Maryland
State of New York
State of North Carolina
State of Ohio
Commonwealth of Pennsylvania
State of Tennessee
Commonwealth of Virginia
State of West Virginia
Department of Agriculture
Department of the Army
Department of Commerce
Department of Energy
Department of Health, Education and Welfare
Department of Housing and Urban Development
Department of the Interior
Department of Transportation
Environmental Protection Agency
Ohio River Valley Water Sanitation Commission
Citizens' Advisory Council to the Ohio River
    Basin Commission

CITIZENS' ADVISORY COUNCIL
to the
OHIO RIVER BASIN COMMISSION

Suite 208-20 36 East Fourth Street
Cincinnati, Ohio 45202 513/684-3831 (FTS)

January 26, 1979

CAC STATEMENT ON THE REGIONAL PLAN

The Commission's plan for water and related resources provides a substantial contribution to the control and best use of the environment. When coordinated with planning for the air and the land, these proposed plans will be a keystone for a total environmental plan for the optimum use of all of nature's resources.

The Commission was not unconcerned about the parallel needs for the air and the land. They realized that the strategy for the total environment involves tradeoffs and clashes between water use and the possible detrimental effects to the air and the land. The relative abundance of water can lead to water uses that only transfer problems elsewhere.

To most citizens it may appear that the Commission has addressed water as the principal resource. However, the recommended plan includes the consideration of some water-related land resources as authorized by Public Law 89-80. Nevertheless, the recommended plan is proposed by the Commission members who represent all of the state and federal agencies who are also working on similar plans for the air and the land -- the total environment.

It is hoped that this water plan will be approved and implemented and coordinated by the Commission with all other plans being prepared to achieve the best use of all of our resources.

Therefore, the Citizens' Advisory Council recommends that the Commission consider adopting an expanded role in addressing all environment-related issues in the basin.

Jackie Swigart — Arthur D. Caster — Louis M. Laushey.

Jackie Swigart — Arthur D. Caster — Louis M. Laushey

CO-CHAIRMEN: *Arthur D. Caster Louis M. Laushey Jackie Swigart*
INTEREST GROUPS: *Agriculture Commerce & Industry Environmental Power Recreation Transportation Water Supply/Quality General Interest*

FOREWORD

This document summarizes the Comprehensive Coordinated Joint Plan (CCJP) for the Ohio River Basin. This plan for the water and related land resources of the Ohio Basin is contained in 15 volumes — this summary and one for each major hydrologic subregion. The primary purpose of the plan is to eliminate duplication and to identify those actions which are essential to the rational and orderly preservation and development of the region's renewable resources and use of its natural resources. The plan is developed by the states and federal agencies responsible for those resources. These 11 states, nine federal agencies, and one interstate compact constitute the Ohio River Basin Commission (ORBC). The ORBC was established in 1971 pursuant to the provisions of the Water Resources Planning Act of 1965 (Public Law 89-80).

The needs and problems of the region's people and the perspective as to what is appropriate utilization of the resources change; therefore, the Commission's plan has been deliberately designed to be a dynamic plan. The ORBC's process provides for changing the plan to meet the changing needs and problems and the goals and objectives of the people in the valley.

What is summarized in this document and contained in the 14 major portions is the current plan for the preservation and development of the water and related resources in the Ohio River Basin.

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THE OHIO BASIN

The Ohio River Basin (Figure 1) drains a total area of 163,000 square miles (excluding the Tennessee River) and includes portions of Illinois, Indiana, Kentucky, Maryland, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia.

The Ohio, the region's primary river, is formed by the confluence of the Allegheny and Monongahela Rivers at Pittsburgh, Pennsylvania. Major downstream tributaries join the Ohio as it flows 981 miles in a southwesterly direction, joining the Mississippi River at Cairo, Illinois. Of the six Mississippi natural tributary drainage patterns, the Ohio supplies the largest volume of flow.

The land in the Ohio Basin can be divided into essentially three parts, corresponding to the three major physiographic provinces shown on the opposite page. The Appalachian Plateau in the eastern portion is characterized by rugged topography resulting from the erosion of flat-lying rocks. The permeable sand and gravel deposits in the valleys of the drainage system provide moderate groundwater supplies. The area has extensive forest cover, poor quality soils, narrow valleys, steep stream gradients, flash floods during the rainy season, and low stream flows during dry seasons.

The Central Lowlands in the northwestern third of the basin is the result of several glaciations. The glaciers coming from the north covered most of the area in recent geologic history. They left soil deposits which are now some of the richest agriculture lands in the basin. The land is flat to slightly rolling and the drainage pattern has been significantly altered from the original, prior to glaciation. In some instances, buried preglacial streams provide extensive groundwater resources.

The Interior Low Plateau in the southwestern third of the basin is dominated by limestone rock which covers most of this region. This has resulted in the rolling terrain forming the Lexington Plains and Bluegrass Regions where farming predominates. Areas of local rugged relief are forested, their soils thin. Groundwater has the typical variability of limestone areas.

Over 49 percent of the land in the basin is in agriculture use, with the forested regions occurring primarily in the north and mideast sections. The basin contains more than 60 percent of the Nation's bituminous coal reserves.

In 1975, the Ohio Basin contained more than 21 million people (Table 1), about 10 percent of the Nation's population. By the year 2000, the regional population is expected to reach nearly 25 million.

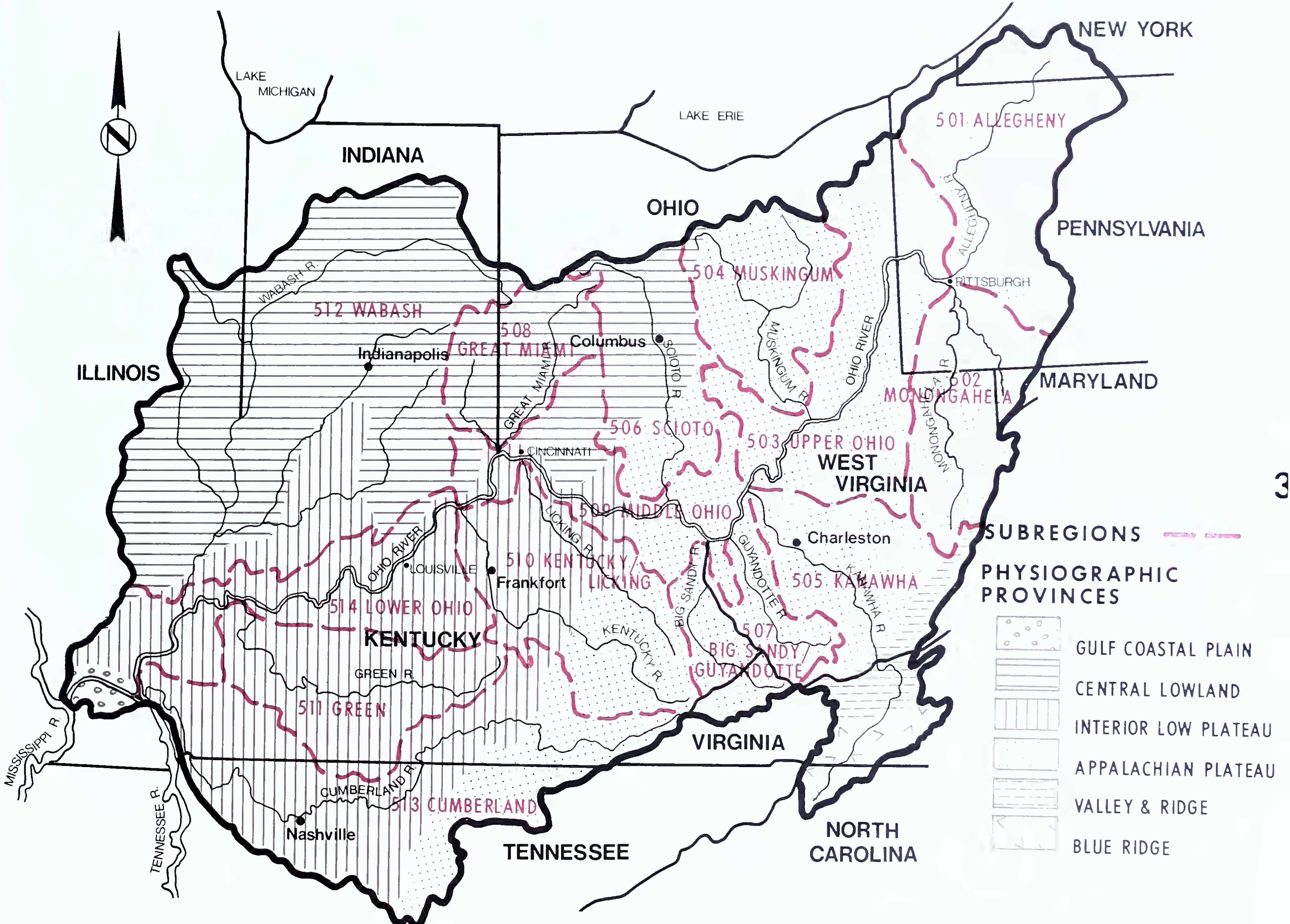

FIGURE 1. SUBREGIONS & PHYSIOGRAPHIC PROVINCES

Table 1. SUBREGIONAL STATISTICS - OHIO RIVER BASIN

Subregion	Drainage Area (Sq.Mi.)	Population (1000's) 1970	Population (1000's) 2000
501 - Allegheny	11,700	791*	811*
502 - Monongahela	7,380	513*	500*
503 - Upper Ohio Main Stem	13,380	4,209	4,502
504 - Muskingum	8,040	1,180	1,474
505 - Kanawha	12,200	848	997
506 - Scioto	6,510	1,308	1,737
507 - Big Sandy/Guyandotte	5,950	367	529
508 - Great Miami	5,400	1,520	2,179
509 - Middle Ohio Main Stem	9,050	1,991	2,475
510 - Kentucky/Licking	10,640	708	981
511 - Green	9,230	462	536
512 - Wabash	33,100	3,549	4,132
513 - Cumberland	17,920	1,313	2,037
514 - Lower Ohio Main Stem	12,570	1,609	2,301
TOTAL	163,070	20,368	25,191

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* Does not include population for the Pittsburgh Metropolitan Area which is reflected in the Upper Ohio Subregion numbers.

With 60 percent of the total population residing in the 15 metropolitan areas and the remaining 40 percent in rural areas, wide variations in economic conditions exist within the basin. The natural resources and the transportation system influence this pattern. Major economic pursuits include the manufacture of primary metals and machinery, hardwood forest products, and chemicals. Most of this manufacturing activity occurs in the large urban industrial centers, accounting for over one-third of the basin's total economic activity. Table 2 indicates the basin's percentage share of earnings of the contiguous United States.

Table 2. EARNINGS OF THE OHIO RIVER BASIN AS A PERCENT OF THE CONTIGUOUS UNITED STATES (OBERS E)

	1970	2000
Earnings Total	9.0	8.9
Agricultural	6.7	7.1
Manufacturing	11.3	11.7
Chemical & Allied Products	11.4	11.2
Primary Metals	25.7	24.5
Fabricated Metals & Ordnance	11.8	12.0
Machinery (Excluding Electrical)	11.7	11.5
Electrical Machinery & Supplies	15.8	16.5
Motor Vehicles & Equipment	12.0	12.9
Coal Mining	70.6	75.7

About 8.3 million people in the Ohio Basin were employed in 1975. The employed segment constituted 39 percent of the basin's inhabitants and nearly 10 percent of the Nation's total labor force. Major earnings were from manufacturing. Total earnings and per capita earnings are expected to more than double by the year 2000, and employment is expected to increase by over 2.5 million people by that year.

On the other hand, the well-being of many of the people in Appalachia (representing almost one-half of the total basin land area) is substandard. Many of the Appalachian inhabitants are rural dwellers. Inadequate income, education, and living standards are characteristic of much of the rural areas.

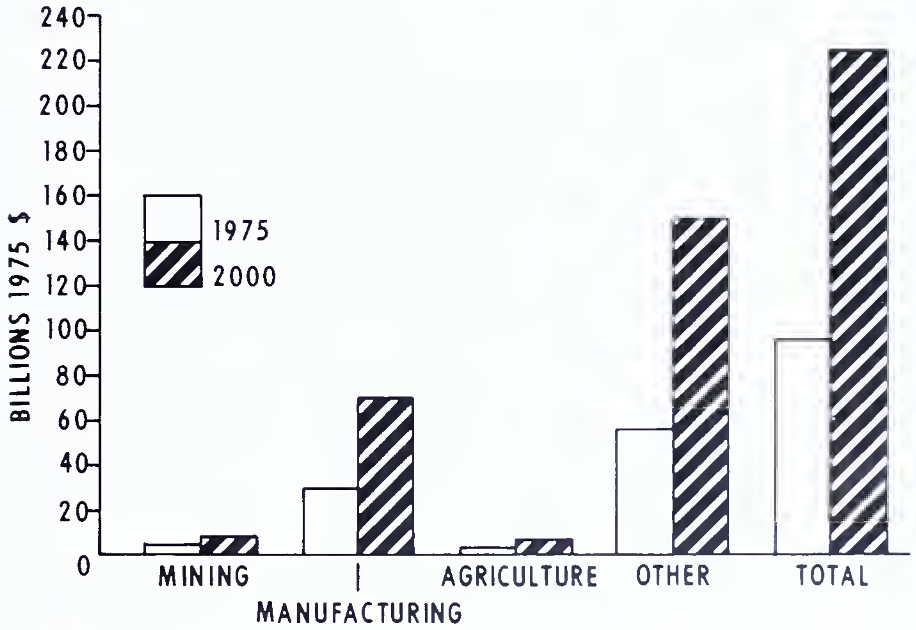


FIGURE 2. SELECTED EARNINGS

THE ORBC PLANNING PROCESS

The goal of the Commission's regional plan is contained in the ORBC definition of its Comprehensive Coordinated Joint Plan: ''..... a specific document that is approved and adopted by the Ohio River Basin Commission identifying those water and related structural and non-structural projects, programs, and other measures designed to enhance the economic, environmental, and social conditions of the area. The CCJP correlates and incorporates the results of all appropriate federal, state, interstate, local, and nongovernmental planning studies (Level A, B, C, and others), research results, basic data, programs, summaries, and interpretations. The CCJP is developed through a continuous and dynamic procedure, and may be prepared in stages.''

Soon after its creation, the ORBC, recognizing the need to hold the cost of water resources planning to a minimum both in terms of time and money, developed a streamlined approach to assembling the CCJP required by Section 201(b) of Public Law 89-80. The methodology which evolved as a result of this effort on the part of the Commission is continuous, with the number of items in the plan growing or diminishing in response to the changing conditions in the region. The amount of detailed documentation also expands as the appropriate information is developed and provided, usually by the members. When heretofore unidentified needs and problems are encountered which are not being addressed by any state or federal program, or when a lack of information essential to further development of the CCJP emerges during the Commission's plan development, appropriate recommendations are made for further study.

The major portions of its CCJP, which the Commission approves for 90-day review and subsequent transmittal to the President and the Congress, are in accordance with the statutory directions of Public Law 89-80. They contain prioritized recommendations for water and related resources projects and programs in the region recommended to be implemented or studied which were agreed to by consensus based on the best information available to the members at the time.

The plan which the Commission transmits is a result of coordinating the separate plans of the individual Commission members, and other plans in the basin through these members, as an alternative to the traditional planning process whereby a new plan is generated as a separate and discreet task by a group of professional planners. Public Law 89-80 is quite specific on the matter of coordination of plans and the Commission feels that it was not the intent of Congress to create another level of planning and planners, but rather to insure that the plans being developed within the region are properly coordinated and screened by the appropriate decision makers within that region.

It must be remembered that the Commission is a regional recommending body which arrives at its recommendations through coordination of the separate activities of its members. To remain in the plan, a project must weather continuing Commission review as it progresses from the early preliminary investigative stages to the point where it is ready for implementation funding. If, at any time along the way, either as the result of a Principles and Standards analysis, an environmental impact statement review, or other assessments, it becomes evident to the Commission that consensus no longer exists for carrying the project to completion, then it is removed from the plan and the President, the Congress, and the governors so advised. The ORBC process allows for changes to occur in the plan whenever necessary or at least four times a year. This ability to change allows the plan to be adjusted to reflect new laws or policy such as may result from the President's New Water Policy Message to Congress in June 1978. The Commission's recommended plan and priorities reflect a regional consensus and indicate to the President, the Congress, the governors, and the state legislatures which projects can be pursued with the general support of government, and with minimal opposition from vested interest groups within the general public. The Commission feels that this is a valuable piece of information and that it was what Congress had in mind when it gave Title II river basin commissions their charge under Public Law 89-80.

PUBLIC PARTICIPATION

In an attempt to obtain the widest possible public involvement in its work, the Commission formed a Citizens' Advisory Council (CAC) in 1972. This organization of approximately 120 individuals consists of eight interest groups representing major groupings of the many publics throughout the basin. Each interest group has a chairman and a vice-chairman who, with the three overall co-chairmen, make up the Coordinating Group (Figure 3). This group deals directly with and advises the Commission and its Policy and Budget Committee on the extent of public participation and major areas of public concern. Ex officio membership is extended to the CAC on all ORBC committees.

During any study involving a particular Ohio Basin subregion, a Citizens' Task Force is formed, the nucleus and leadership of which is derived from the local CAC members. Additionally, by simple request, any citizen can obtain membership on a task force. The task force participates in all committee and work group efforts. Also during such a study, numerous public workshops are held throughout the subregional area so the local citizens can participate in defining the needs and problems of the area, and in choosing recommended solutions to those needs and problems.

A regularly published newsletter, The Water Line, provides information on Commission activities to the general public. Special newsletters are published during Commission-sponsored studies to reach those individuals not able to participate in committee, work group, or workshop meetings.

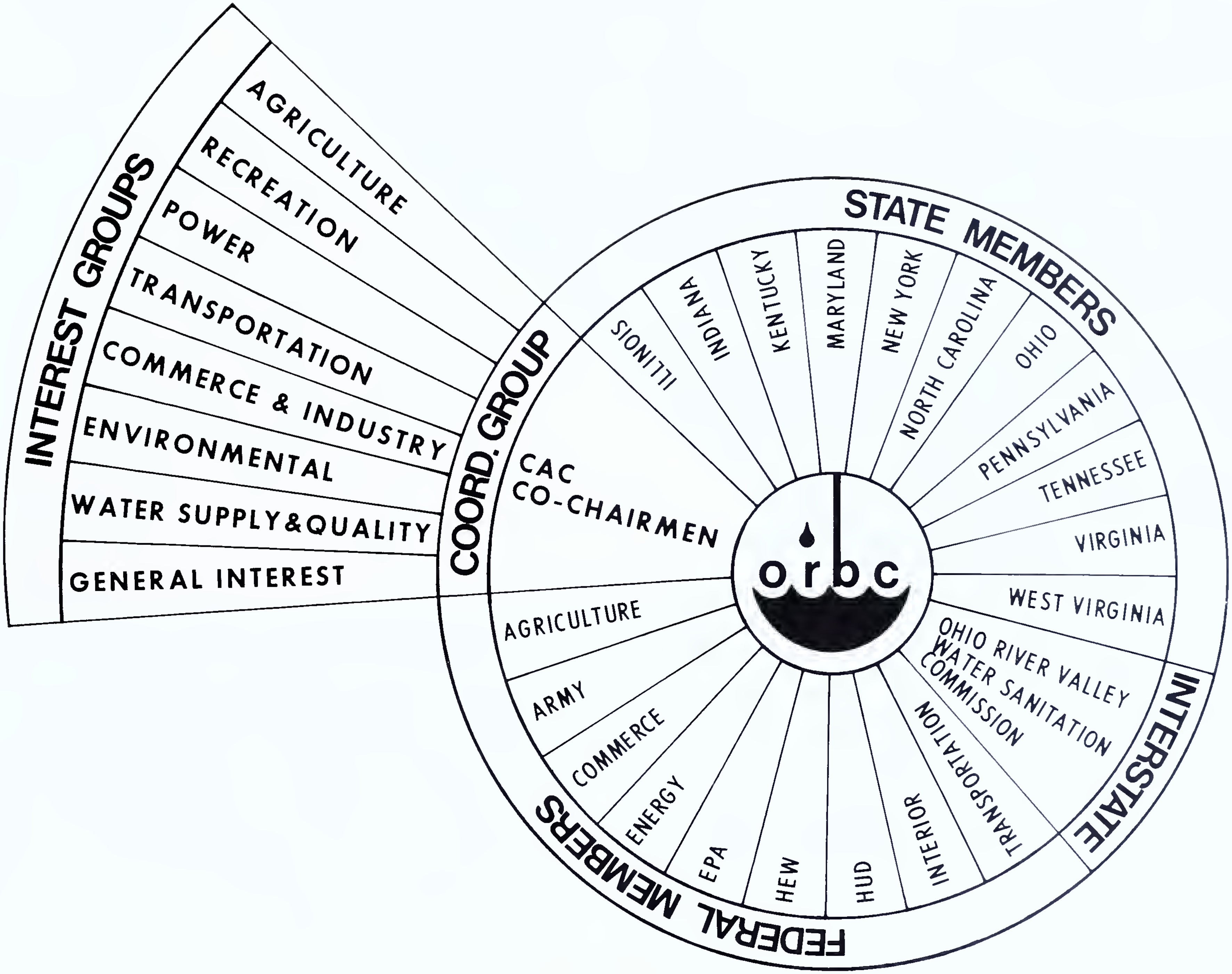


FIGURE 3.

CITIZENS' ADVISORY COUNCIL (CAC) TO THE OHIO RIVER BASIN COMMISSION

POLICY ISSUES

MINE DRAINAGE

Mine drainage in the Ohio River Basin is a serious problem contributing, among other things, to loss of water for domestic and industrial uses, degradation of recreational facilities, lethal effects on aquatic life, and accelerated deterioration of bridges and power plant facilities.

The U.S. Army's National Strip Mine Study, July 1974, indicates that a total of 10,070 miles of streams in the Ohio Basin are affected by mine drainage from coal mines. For perspective, the same report indicates that 13,000 miles of streams in the United States are affected by drainage from all types of mining. Of more than 10,000 miles of streams affected by mine drainage in the Ohio Basin, some 4,000 miles are in the Allegheny and Monongahela Basins, with most of the remaining problem concentrated in other portions of the eastern and southeastern Ohio River Basin area.

The most significant problem in the Ohio Basin is the Monongahela Subregion which has over 2,000 miles of streams affected, mostly the result of abandoned mine drainage. During the ORBC study of that subregion, the Commission brought together the work of the several states and federal agencies in an effort to determine ways to solve this problem.

The states in the Ohio Basin have programs to assure that present and future coal mining operations will not create serious environmental problems. However, so that these programs will have the desired effect, the acid mine drainage problems from past coal mine operations must be brought under control.

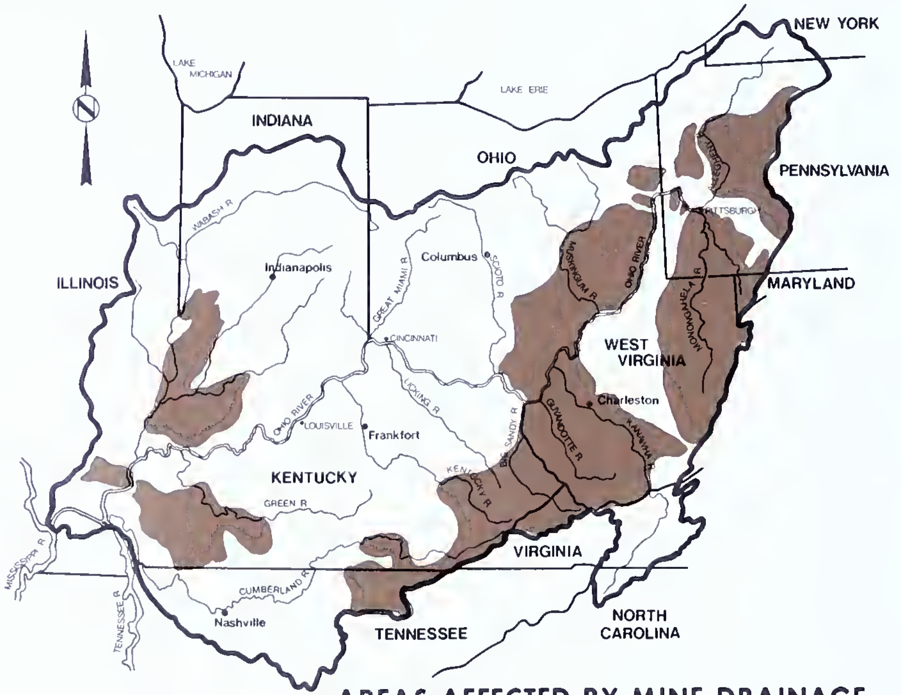


FIGURE 4. AREAS AFFECTED BY MINE DRAINAGE

As a result of the Monongahela Study in 1975, the states of the basin recommended that a federal/state abandoned mine drainage abatement program, funded on an 80 percent federal and 20 percent non-federal basis, be instituted by Congress. The August 1977 Surface Mining Control and Reclamation Act includes such a program. While the acid mine drainage program will be ameliorated by this Act, it should not be regarded as a panacea since acid mine drainage abatement is not the major concern of the Act. It will be necessary to monitor the impacts of the 1977 Surface Mining Control and Reclamation Act and state programs to see if future revisions are needed to fulfill the intent of the Act.

NON-POINT SOURCE POLLUTION

There are four basic sources of non-point source pollution in the Ohio Basin: runoff from agricultural and forested land; mining runoff from both abandoned and active mines (previously discussed); runoff from urban areas; and stream bank erosion. The concern with non-point pollution is the sediment that reaches the streams, in some instances clogging them and creating turbidity. Of greater concern is the potential pollutants that enter the stream with the sediment, such as pesticides and organic matter. In the Commission's Ohio Main Stem Study, an analysis of non-point pollution relative to the Ohio River was conducted. No need was shown for an intensive non-point source control program to meet water quality standards on the Ohio River. However, non-point source pollution problems have been noted on the Ohio River tributaries. Control of such pollution on the tributaries will help keep these problems to a minimum. This control could be maintained by the application of best management practices for agriculture, silviculture, mining, and construction operations.

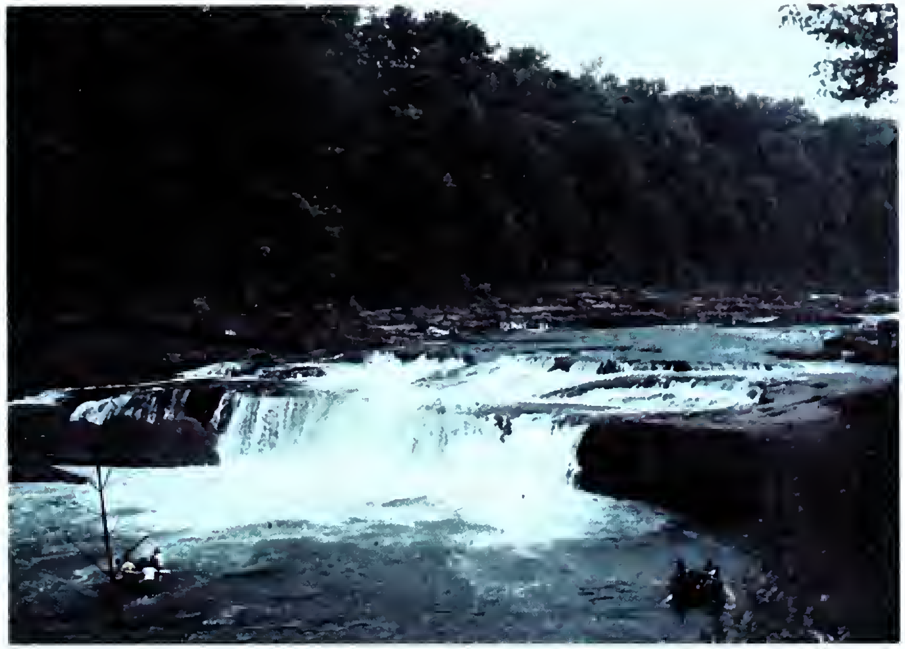
Currently, there are statewide and areawide water quality management studies (208 studies) which cover the entire basin. These are attempting to assess the magnitude of the non-point source pollution problems on smaller streams in urban areas. Sufficient data are not available to identify non-point source pollution as a significant problem in the Ohio Valley. Accordingly, the Commission has recommended that a small tributary in the Ohio Basin be monitored and a detailed, complete, and well-calibrated mathematical model of point and non-point sources be developed. This program would probably extend over a number of years since each of the 208 studies to date has indicated that the length of time for study and data collection has been too short to define adequately the existence and/or extent of the non-point source problem.

ENVIRONMENTAL NEEDS

Development-type projects are formulated and selected because they solve a problem or satisfy a need of the people. The quantification of these needs and how well potential projects satisfy them has been developed over the years.

By contrast to this well understood relationship, there are no generally accepted procedures for analyzing needs and selecting environmental projects. In the development of an environmental quality (EQ) plan, the identification of environmental needs, on which EQ-oriented recommendations can be based, is currently based solely on the quality of the environment. These needs should be expanded to include the needs of people, in addition to the need for natural resource conservation and natural area preservation. Arguments for preservation of quality natural areas have historically lacked the impetus of a definition of quantified needs based on commonly accepted standards and criteria. Even with the encouragement of the Principles and Standards for ''equal'' emphasis of national economic development (NED) and EQ objectives, lack of comparability between the two accounts remains a significant obstacle to placing similar emphasis on meeting NED and EQ objectives.

The Ohio Environmental Needs Study attempted to quantify needs. Conducted by the ORBC, through the Ohio Main Stem Study, this effort analyzed the scenic qualities of the rivers in the State of Ohio portion of the study area. Potential state wild and scenic rivers were identified based on state criteria, i.e., the quality of the environment. Then, utilizing a recreation development model, state-identified recreational activity needs which could be met by these rivers were quantified. In this manner, potential wild and scenic rivers were shown to fulfill specific people needs as well as preserve environmentally valuable resources. Finally, two lists of potential streams were developed, one based on environmental quality and the other on the ability to satisfy recreation needs. This information provided a better and broader basis for determining which rivers should be pursued as scenic rivers. Study results were instrumental in recommending five streams (149 miles) for state designation and 10 streams (278 miles) for further detailed studies.



Expanding on this case study and the ORBC's desire to develop a more complete EQ plan, the Commission has recommended a $1 million environmental study of the Ohio River Basin. This study would:

1. develop an ecological and environmental conceptual framework for the Ohio Basin and translate that framework into environmental needs, including necessary research, data collection, etc., and

2. recommend:

— specific measures to fulfill those needs, such as natural areas, preserves, scenic rivers, environmental corridors, and fish and wildlife game and non-game management areas; and

— specific policies directed toward the preservation and enhancement of the basin's flora and fauna.

NATURAL AND RECREATION AREAS

The Land and Water Conservation Fund has been the primary vehicle through which many natural areas and local and state parks have been funded. Currently, this fund provides that 50 percent of the capital cost for such areas is authorized to be paid by the federal government, the remainder to be paid by non-federal sources. Local levels of government of the basin states have purchased sufficient properties so that today the cost to operate and maintain these areas is impinging on their ability to purchase additionally needed lands. This lack of funds means that many desirable natural and recreation areas will not be brought into the public domain. This is particularly crucial for sensitive natural areas, more than 100 of which are recommended in the Commission's CCJP. Accordingly, the ORBC states have recommended that the cost sharing under this program be altered from 50/50 to 75 federal/25 non-federal. This particular fund is scheduled for several significant increases over the next few years due to a greater number of offshore oil leases which generate the fund. An associated increase in the general tax fund would not be required to finance the higher federal percentage for cost sharing.

While most areas in the Ohio Basin have inadequate facilities to meet the surface-water boating and fishing demands, the needs are most acute north of the Ohio River where the larger population centers are located. Also in this area the land is flatter and more highly cultivated. The net result of this combination is the lack of sufficient reservoir sites where large multi-purpose reservoirs could be located to satisfy a variety of needs, one being recreation. Because of this bias of more recreation facilities on the south side of the river, there is a general migration across the Ohio River into the southern states to satisfy recreation demands. While this migration enhances the economies of the six states south of the river, it also increases the travel times necessary for the northern inhabitants to reach satisfactory recreational experiences.

FLOOD PLAIN MANAGEMENT

Over the last five years, the ORBC has resolved many interstate issues on flood plain management on the Ohio River, and maintains a permanent committee to address new problems as they arise. When the Commission started to resolve these issues, three different criteria were being used by the states to determine minimum floodway width; allowable increases in upstream flood levels for the 100-year flood were 0.1 foot, 0.5 foot, and 0.1 foot. A coordination procedure was developed to assure that the effects of using these different criteria can be resolved on an individual-case basis. The Commission developed and adopted a 100-year flood profile for the entire Ohio River to provide a consistent data base. There were concerns that allowable development in the floodway fringe would eventually eliminate sufficient amounts of valley flood storage so that flood heights downstream would be increased. A special reconnaissance-scope study analyzed this problem for a reach of the Ohio River and determined that loss of valley flood storage outside the regulatory floodway does not significantly increase flood heights downstream. The Commission has established a mechanism for coordination on interstate streams relative to issuing permits and establishing zoning. Today, the states and agencies are pursuing flood plain management in a positive cooperative manner.

In the Ohio Main Stem Study, five case studies were undertaken to define typical flood problem characteristics which lend themselves to nonstructural solutions. Emphasis was placed on evaluating the effectiveness of applying nonstructural solutions to reduce flood damages for which no acceptable solution was found. Study results indicated that these flood damages cannot be addressed effectively by nonstructural solutions alone. Rather, it was determined that, by combining structural and nonstructural approaches and revising economic analysis procedures, a significant portion of these remaining damages could be addressed. The nonstructural alternatives need to be studied at the same time and funded on a par with the traditional structural alternatives so that the availability of a program does not dictate the selected solution. To accomplish this, guidelines need to be developed for Section 73 of the Water Resources Development Act of 1974 so that the implementation of nonstructural solutions may proceed.

INSTREAM FLOWS

Traditionally, the Ohio Basin has been considered a water-rich region; thus, the allocation of water to various uses has been found unnecessary. However, with the increasing demands for consumptive use of water, more and more discussion is occurring about the possibilities of developing water allocation schemes to handle future problems. This is particularly true in the northern tributaries at the headwaters of the basin.

Adequate water is available to meet future demands. However, if too little water is left in these tributaries, unacceptable environmental degradation might result. In order to determine the wise and proper allocation of water, and whether sufficient water is available to meet identified needs, the amount of water that should remain in the various streams of the valley for fish and wildlife and recreation purposes needs to be determined. An initial effort to determine such flows is being funded by the Commission in the State of West Virginia. Also, the U.S. Fish and Wildlife Service has been requested to study several places in the basin as part of an energy study. These efforts are just the beginning of the instream flows analysis.

ENERGY

Because the Ohio River Basin currently produces 70 percent of the bituminous coal in the United States and has more than 60 percent of the remaining recoverable coal reserves, the basin will be called upon to provide an appropriate contribution to the Nation's future energy needs. The water transportation system and the water available for cooling and the processing of coal to electricity or synthetic fuels in conjunction with the vast coal resources has made the Ohio Basin an ideal site for the location of coal conversion facilities, either for direct electric generation or for conversion to synthetic gas and liquid fuels. Consequently, the ORBC has been heavily involved in determining the adequacy of the water resource to support anticipated energy development.

Today it has been determined that there is adequate water available within the basin for the anticipated energy needs through the year 2000 and beyond. The effects on Ohio River water quality of all consumptive use is negligible through the year 2000. While water quantity problems of energy development are minor, it is acknowledged that air quality problems are likely to be significant. Whether there is ample water to support the anticipated energy in the major tributaries has not yet been determined for all tributaries. However, if all of the power anticipated to be developed in the Ohio Basin is located along the Ohio River, there is ample water. The Commission has recommended that power companies of the Ohio River Basin should continue to meet the needs of their traditional market areas and that the export of energy should be in the form of coal rather than electricity. The Commission has also recommended that new power plants on the Ohio River should not automatically be required to construct offstream cooling facilities. The need for offstream cooling at each power plant should be determined by a thorough analysis of effects on water quality and other aspects of the environment at each site.

DAM SAFETY

The ORBC States' Dam Safety Committee was formed in January 1977 for two principal purposes:

1. to provide a forum wherein the region's state dam safety experts could regularly convene to discuss mutual problems in administering state dam safety inspection programs; and

2. to develop specific recommendations for federal legislation to implement a national dam safety inspection program such as envisioned by the National Dam Inspection Act (Public Law 92-367).

The states have supported the establishment of a national dam safety program with appropriate division of responsibilities between the federal and state governments. Recommendations include federal funding assistance to states and a sufficiently broad program to assure inclusion of all impounding structures which may constitute a danger to public health and safety. To date, this committee has given testimony before both the House and the Senate of the Congress.

RECOMMENDED PLAN

This section describes the recommended plan of the Ohio River Basin Commission. It identifies the needs and problems relative to each particular use of the region's water and related resources, and the Commission's plan to address those needs and problems. Generally, specific projects and programs are not identified in detail in the text which follows, but are itemized in the 14 subregional volumes of the CCJP and in the Commission's Priorities Report. The Commission's plan for development and preservation of the region's water resources currently recommends an additional investment of about $5 billion, nearly 60 percent of which is for municipal wastewater treatment facilities. The Commission also recommends an estimated $4.2 billion for acid mine drainage abatement and other land treatment measures which impact on the water resource.

The emphasis given to each project and program category varies according to currently perceived priorities and relative to the amount of work in that category which has been accomplished to date. Because the Ohio Basin's resources, needs and problems constitute a different mix than that of the Nation, regional and national priorities do not always coincide. Recent and recommended future expenditures show that the current emphasis is placed on water quality and other environmental concerns. The flood damage abatement program does not constitute an increase of historical patterns. The navigation problem is one of maintaining adequate capacity in the existing system rather than expanding the miles of waterway. Water conservation measures are being pursued; for example, the Commission's recommendation that new power plants on the Ohio River not be automatically required to construct cooling towers could save up to one-fourth of the basin's projected increase in consumptive water use for all sectors of the economy.

The recommendations in the Commission's plan are to be implemented by federal, state, and local governments and private industry. Although the Commission itself does not have implementation authority, the individual members of the Commission do. Thus, just as the plan brings together the work of federal, state, local, and private interests in the basin, the implementation of the plan is accomplished by those same entities. Major recommendations require Congressional and state legislature action. This Commission's Priorities Report is prepared annually to provide guidance to the President, the Congress, the governors, and the state legislatures on which items in the plan should be implemented first.

WATER SUPPLY

The Ohio River Basin has abundant but limited water supply. In addressing water supply problems, the Commission has concentrated on the adequacy of the resource: whether there is adequate flow in the streams and adequate water available in the ground to meet the various demands for water. The ORBC has not concentrated on whether water supply treatment facilities and individual distribution systems are adequate.

Table 3 displays the consumptive use of water in 1975 and the projected consumptive use at the year 2000. This use is most important because it is the difference between what is withdrawn from the river or ground and not returned. The consumptive use constitutes a reduction in the stream flow and, consequently, a reduction in the amount of water available to downstream users. As can be seen from Table 3, the consumptive use is anticipated to more than double between 1975 and 2000. Also in this table is the existing 7-day/10-year low flow which is the drought condition used for determining levels of water pollution control. Figure 5 illustrates this for the basin. Table 4 compares the basin's water supply to the contiguous United States.

Table 3. OHIO RIVER BASIN - CONSUMPTIVE WATER USE, 1975 & 2000
(cubic feet per second)

		501-Allegheny	502-Monongahela	503-Upper Ohio	504-Muskingum	505-Kanawha	506-Scioto	507-Big Sandy/Guyandotte	508-Great Miami	509-Middle Ohio	510-Kentucky/Licking	511-Green	512-Wabash	513-Cumberland	514-Lower Ohio	TOTAL
1975	Municipal	29	30	29	27	18	46	7	36	36	12	6	72	25	36	409
	Industrial	70	168	291	17	295	20	10	34	60	1	1	52	11	28	1058
	Agricultural	22	7	19	17	9	27	2	33	14	33	11	120	19	22	355
	Power	70	71	85	40	40	2	11	5	40	2	29	37	16	70	518
	Synfuel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TOTAL	191	276	424	101	362	95	30	108	150	48	47	281	71	156	2340
2000	Municipal	34	41	43	41	27	35	7	56	51	20	11	117	42	56	581
	Industrial	81	183	392	31	438	30	17	57	68	2	2	101	20	47	1469
	Agricultural	37	10	33	35	15	102	3	118	21	62	14	369	28	30	877
	Power	137	74	451	43	29	-	60	84	442	45	37	498	195	384	2479
	Synfuel	16	-	60	-	-	-	-	-	48	-	-	-	-	240	364
	TOTAL	305	308	979	150	509	167	87	315	630	129	64	1085	285	757	5770
1975-2000 Increase		114	32	555	49	147	72	57	207	480	81	17	804	214	601	3430
Existing 7-day/10-yr Low Flow		1680	1010	6850	638	1505	296	65	478	12263	189	373	2605	4100	46300	

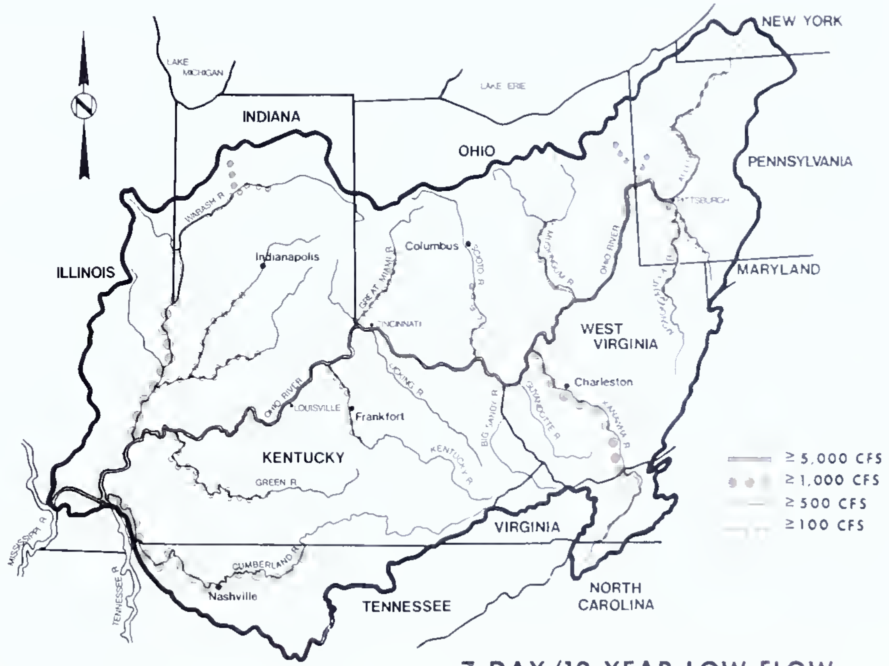


FIGURE 5.

7 DAY/10 YEAR LOW FLOW

Table 4. WATER SUPPLY: THE OHIO RIVER BASIN VERSUS THE CONTIGUOUS UNITED STATES, 1975 & 2000

(as percent of U.S. total)

	1975	2000
Surface Runoff	13.6	13.6
Water Withdrawals	10.3	5.5
Water Consumption	1.6	3.2
Municipal & Domestic	5.7	5.4
Manufacturing	13.7	12.1
Agricultural	0.04	0.08
Mining	4.2	4.9
Power	22.8	16.1

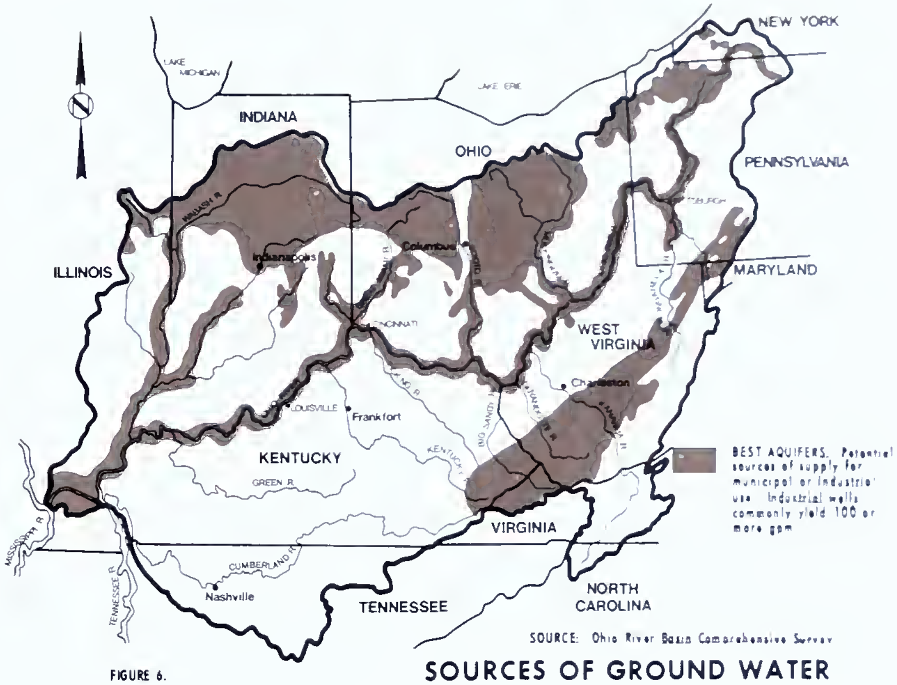
The groundwater system (Figure 6) in the Ohio Basin is generally connected to the stream system and is the source of the natural low flow. Any significant depletion of groundwater will have a corresponding depletion in stream flow. Furthermore, a danger exists that groundwater can be polluted by surface mining, thereby causing degradation of surface streams. The pollution of groundwater reserves as a result of coal mining may become a serious threat to the basin's water supply sources.

There is adequate water in the basin to meet these anticipated demands; however, on some of the tributaries the projections of consumptive use are rather large relative to the existing 7-day/10-year low flow. This is particularly true of the Scioto, Big Sandy/Guyandotte, and Wabash Subregions. These potential problems are currently being analyzed by the Commission. Should these projections bear the scrutiny of a more detailed study, solutions will have to be found for these problems. The ORBC has determined that, in the Monongahela Basin, there is insufficient water available during dry periods to support the projected increased use. Additional reservoir storage is needed to permit development.

Potential solutions include management of water use and building additional reservoirs to conserve water during periods of excess, so that it will be available when needed during periods of drought. The natural 7-day/10-year low flow on the Ohio River has been doubled by the reservoirs which have been built, even though only a small part of the storage of these reservoirs has been used to improve low flow during drought conditions. If additional reservoirs were constructed to conserve the water which now runs off during flood periods, and if the water available in the existing systems was managed for optimum instream flow and low flow conditions, additional major improvements can be realized. The problems related to instream flow requirements are directly dependent on water quality standards and the minimum and maximum volume of water required for aquatic life. Except for the

Monongahela Basin, the flows required to maintain water quality are usually much greater than those required to maintain navigable waterways. In the Monongahela River, navigation and water quality requirements are restricting increased consumptive water use during periods of low flow.

Pennsylvania is currently managing stream flow by requiring new major water consumers to provide their own storage. This storage would be used to make up the consumptive use during dry periods. Indiana, through its permit system on navigable streams, will not allow new water withdrawals to lower stream flow below existing 7-day/10-year low flow.



SOURCE: Ohio River Basin Comprehensive Survey

FIGURE 6.

SOURCES OF GROUND WATER

FLOOD DAMAGE ABATEMENT

Significant progress has been made in the Ohio Basin in reducing the historically high flood damages in the area. Record floods in the late 1930's provided much of the stimulus for the program that initiated the construction of a system of large reservoirs and local protection projects. This effort, in combination with the application of watershed and general land management measures, is in large part responsible for the significant reduction in flood damages throughout the region. Figure 7 illustrates the Commission's flood damage abatement recommendations.

The estimated total natural average annual flood damages for the basin is about $590 million (5.5 percent of the national total). Of this, approximately $390 million, or 65 percent, has been abated by existing and underway projects and programs, with nearly 50 percent of this reduction occurring in the Ohio Main Stem area. Project and program study recommendations account for nearly $63 million in additional flood reductions and would raise the amount of damages abated to about 76 percent. The remaining $143 million, or 24 percent, represents damages for which no acceptable solution has yet been identified.

Even though no action is taken relative to these damages, there still is a substantial state and federal budget obligation for such things as insurance subsidies and disaster relief.

To address these remaining damages, a combination of approaches is likely to be applied. Because of historical precedence, potential structural projects have been fairly well identified and are, therefore, limited in their future application. Nonstructural solutions are also limited and cannot, if applied alone, be expected to significantly reduce remaining flood damages for many years. As an example of this, flood plain regulation will not immediately reduce flood damages to existing structures though it does keep the problem from getting worse by preventing construction, which causes damage or is susceptible to damage, in the 100-year flood plain. The Commission has recommended that all flood plains be regulated either by the states, where appropriate, or by local governments via the HUD flood insurance program. Likewise, flood insurance payments and disaster relief measures will not reduce damages, though they will assist in lessening the sudden impact of residual flood damages. Susceptibility to flooding will be modified and some damage reduction will occur through raising structure heights, flood warning, and relocating structures out of the flood plain.

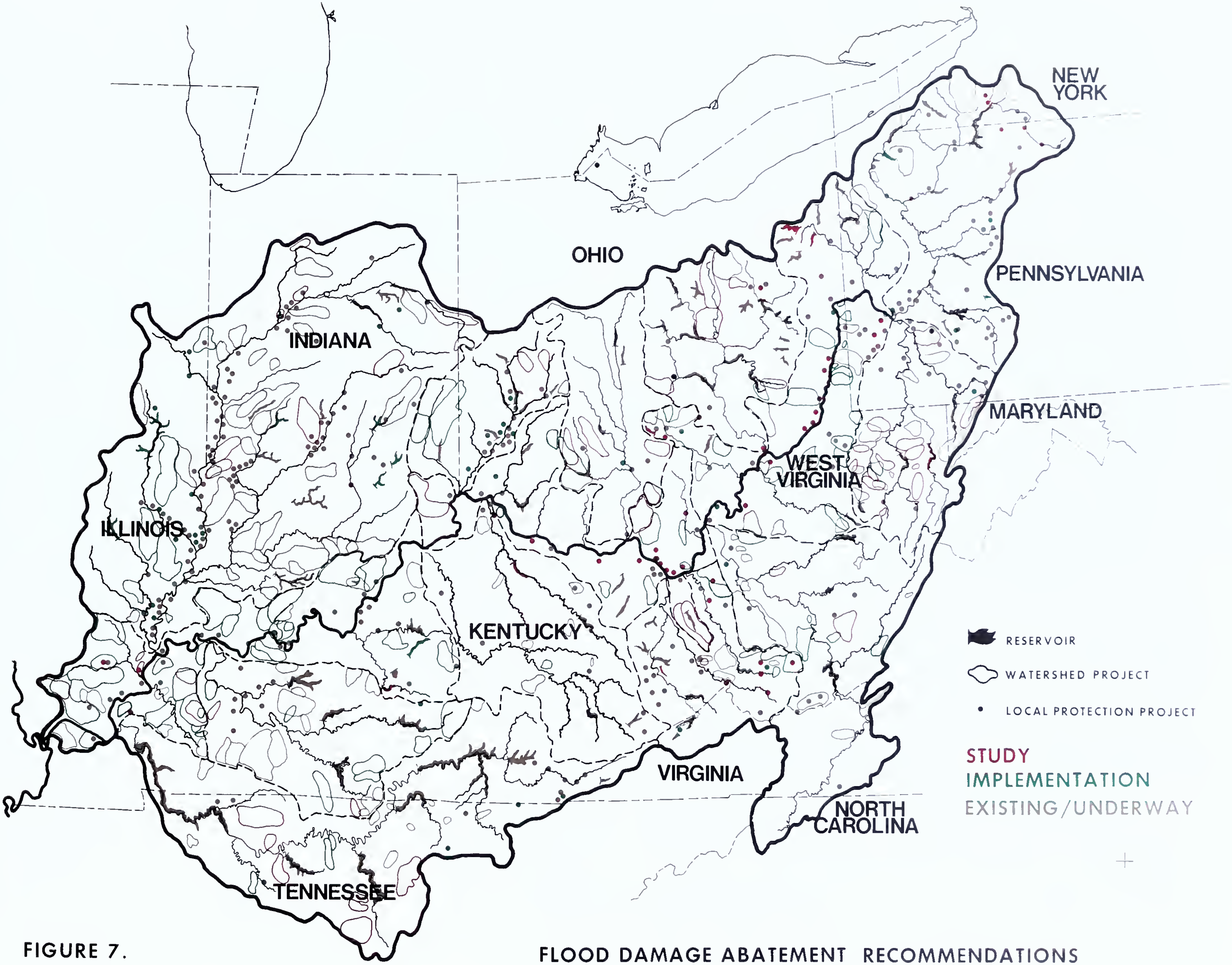


FIGURE 7. FLOOD DAMAGE ABATEMENT RECOMMENDATIONS

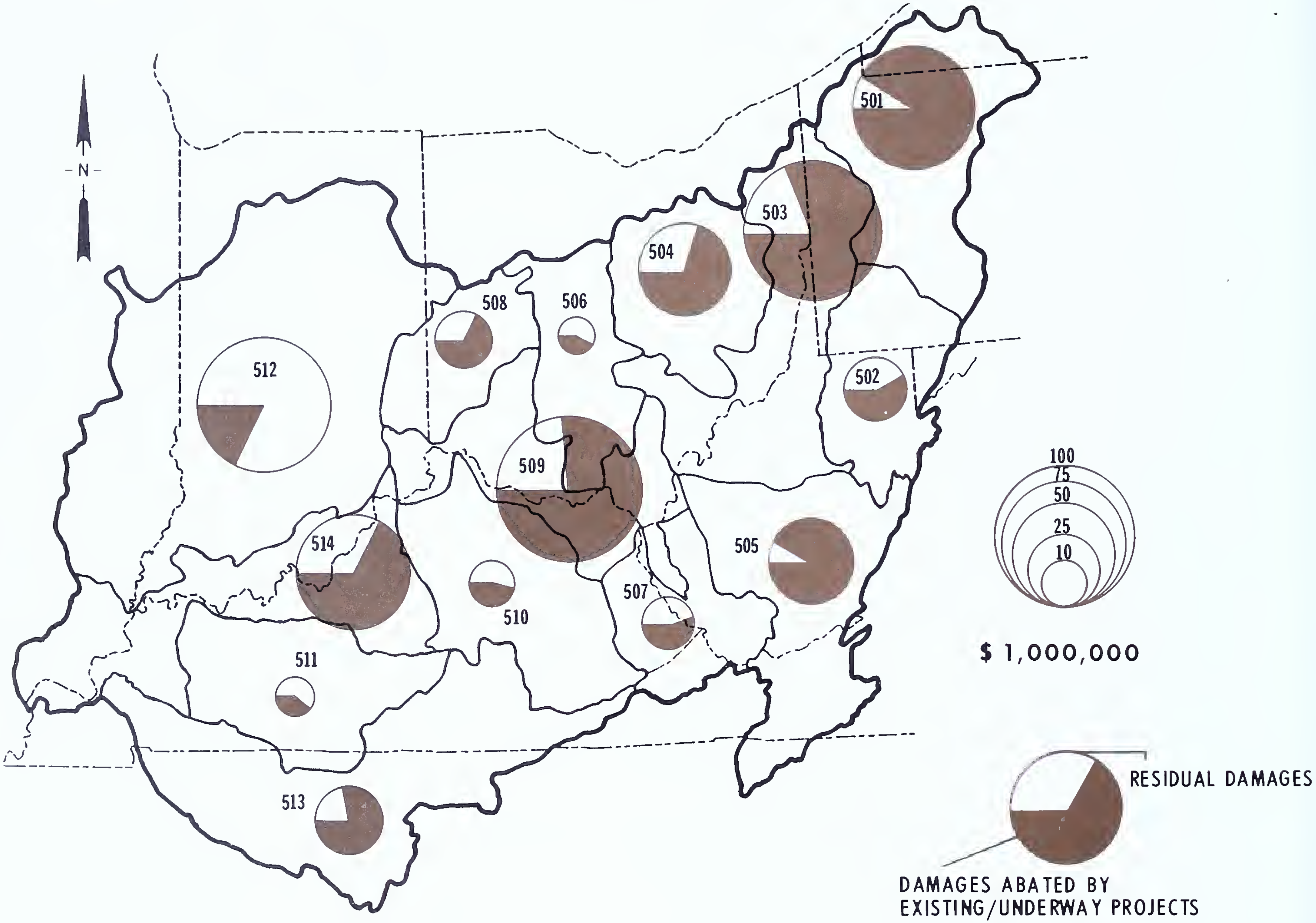


FIGURE 8. AVERAGE ANNUAL FLOOD DAMAGES
ABATED BY EXISTING/UNDERWAY PROJECTS AND RESIDUALS

The most promising solution toward addressing a significant portion of the residual flood damages may well be a mix of structural and nonstructural solutions. This approach is discussed in the Policy Issues Section.

Figure 8 illustrates the average annual flood damages by subregion and the extent to which those damages have been abated by existing and underway projects. Much progress has been made in relieving the urban flood problem. Three-fourths of the damages that would occur without any programs are urban; one-fourth are agricultural. Today the existing and underway facilities have solved more urban problems than agricultural; the remaining damages are slightly more than 50 percent agricultural. This is particularly true in the Wabash Basin where the remaining damages are 77 percent agricultural. One reason for the disparity in the flood damage abatement program is the difference in economic conditions between urban and agricultural projects. Further, the implementation of the programs which address agricultural problems are not being funded as vigorously as those for urban problems. This is understandable in that the urban situation includes the life-and-human-safety factor, whereas the agricultural problem is primarily an economic one. Although the dollar amount of average annual damages occurring in the Appalachian portion of the basin is not as great as that in the other two major portions, the situation is more severe in that most of the developable land is flood plain. Consequently, a greater percentage of the resources of the area is exposed to flood damages.

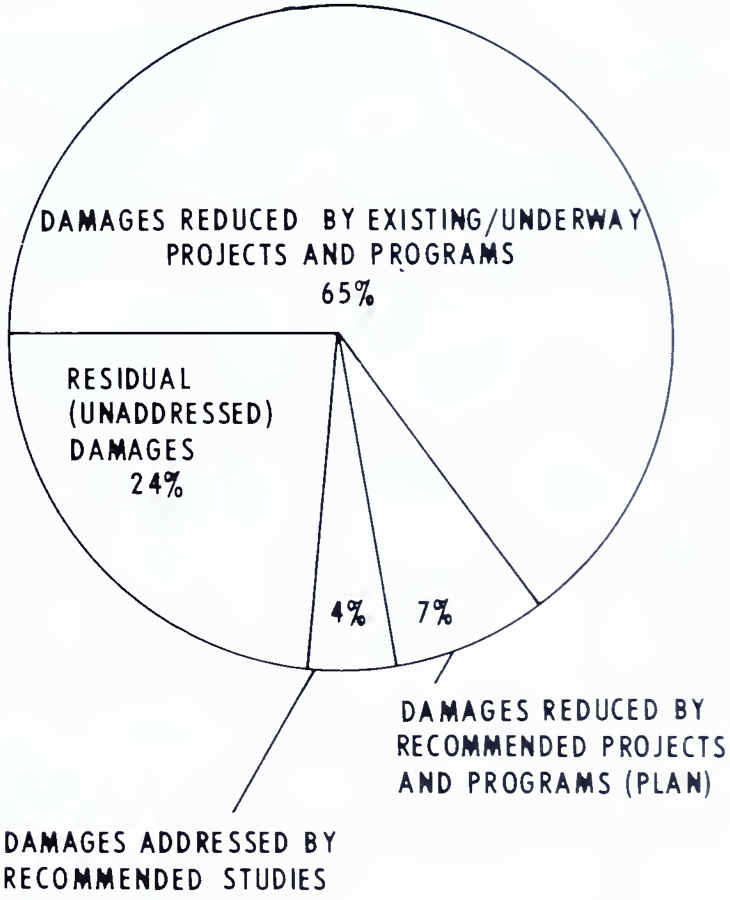


FIGURE 9. **FLOOD DAMAGE ABATEMENT PLAN**

TRANSPORTATION

Transportation developments on the Ohio River are the oldest water projects in the valley. Government improvements for navigation date from the early 1800's. The Ohio River from Pittsburgh to the Mississippi River has been canalized for freight transport by a system of locks and dams. The lower Allegheny, Monongahela, Kanawha, Kentucky, Green, and Cumberland Rivers also have been improved for barge navigation (Figure 10).

The Ohio River is a key element of the Nation's inland waterways system which carries over one-half (58 percent in 1974) of the domestic intercity transportation in the basin, mostly long distance movement of bulk commodities. Coal, petroleum, grain, construction aggregates, and miscellaneous materials move down the Ohio. Coal, chemicals, construction aggregates, petroleum, and other miscellaneous commodities move upriver.

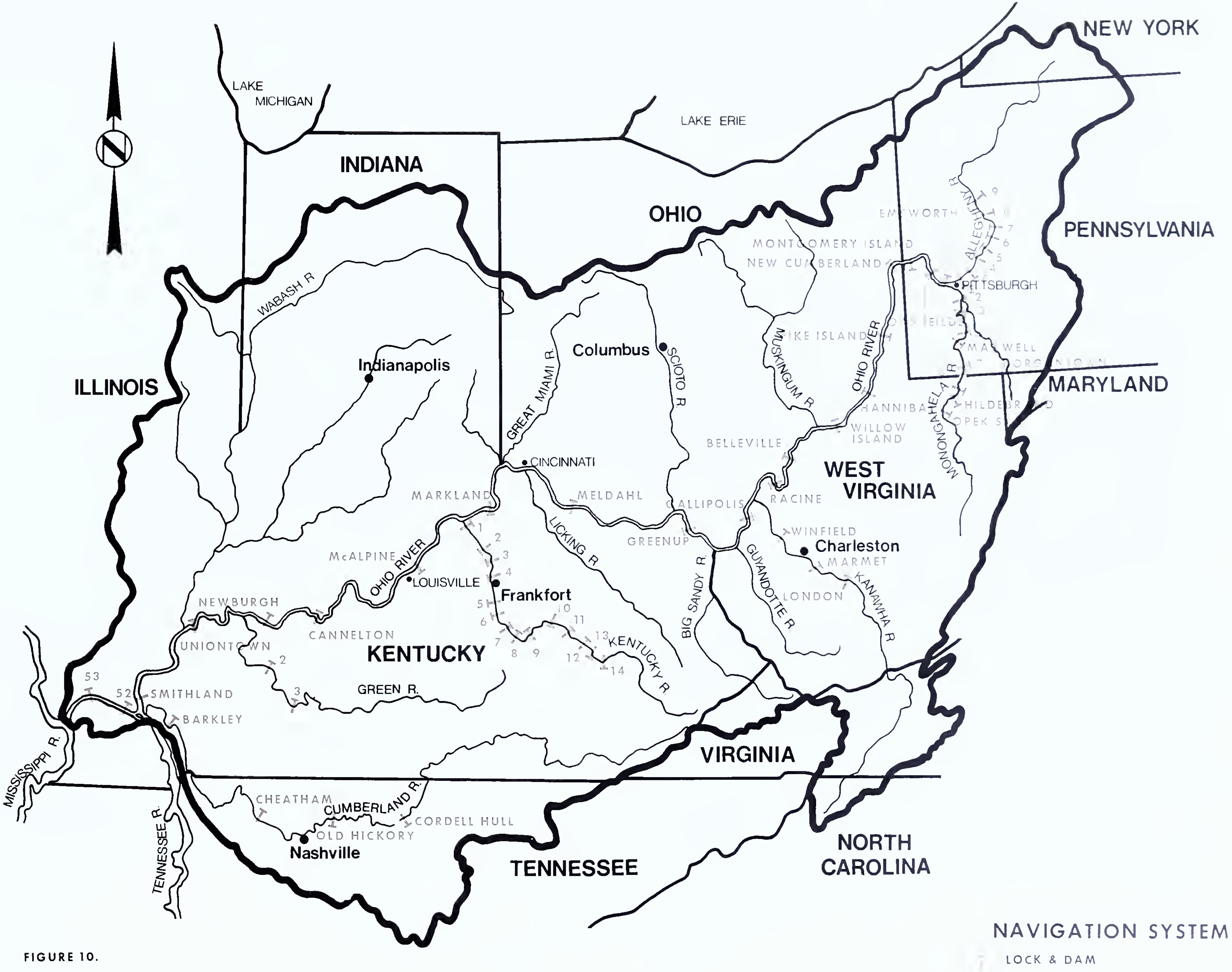
THE OHIO RIVER

On the Ohio a nine-foot all-year channel was assured by a series of 50 movable locks and dams completed in 1929. Four fixed dams were built by 1937. In the 1950's, a modernization program was begun to replace all but six dams with 14 higher, fixed lock and dam structures. All 14 are either under construction or completed.

Except for the Mississippi, the Ohio River carries the largest amount of freight of any waterway in the United States — 148 million tons in 1976 (Table 5), one-fourth of the U.S. total. By the year 2000, the Ohio is expected to increase freight movement by 2.4 times over 1974. A majority of the freight is expected to be fossil fuels.

Most of the navigation structures along the Ohio River can accommodate the projected increases in traffic through 2000. Gallipolis has locks inadequate for current traffic, and Locks and Dams 52 and 53 have large chambers of temporary-type construction. ORBC recommends construction of a larger lock at Gallipolis compatible with the rest of the system, and a study of the lower river (L&D's 52 and 53) to determine an appropriate solution. Upon completion of the new lock at Gallipolis, all but the upper three dams — Montgomery Island, Dashields, and Emsworth — will have the new large lock chambers.

McAlpine Locks and Dam is anticipated to reach capacity about the year 2000. It is recommended that the Department of the Army conduct a preliminary investigation for the need for modification of that structure.



NAVIGATION SYSTEM

LOCK & DAM

FIGURE 10.

Table 5. FREIGHT TONS ON THE OHIO RIVER BASIN NAVIGATION SYSTEM, 1976 (1)

(in millions)

	Commodity Group								
Waterway	Coal and Coke	Crude Petroleum and Pet. Fuels	Aggregates	Grains	Chemicals and Chemical Fertilizers	Ores and Minerals	Iron Ore and Iron & Steel	All Others	Total Traffic
Basin Navigation System (2)	103.5	20.0	21.2	5.4	9.5	3.4	4.3	10.8	178.1
Ohio River	78.8	19.8	17.4	5.4	9.1	3.4	4.3	10.3	148.4
Allegheny	2.3	0.2	1.5	0	*	0.2	0.2	0.5	5.0
Monongahela	30.0	2.2	1.7	0	0.5	0.5	1.3	0.4	36.5
Little Kanawha	*	0.1	0.2	0	0	0	*	*	0.4
Kanawha	6.7	1.1	2.1	0	1.8	0.2	*	0.3	12.3
Big Sandy	*	0.8	0.1	0	0.2	0	0	0.3	1.4
Kentucky	0	0	0.5	0	0	0	0	0	0.5
Green & Barren	13.6	0	0	0.2	*	*	0	*	13.8
Barkley Canal	*	1.2	1.4	*	0.2	*	0.3	0.6	3.6
Cumberland	4.7	1.3	2.4	*	0.2	*	0.3	2.4	11.3

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(1) Amounts are rounded to nearest 100,000 tons; those less than 50,000 are indicated by an asterisk (*). Due to rounding, amounts may not add to totals shown.

(2) Freight tonnages shown for the basin system as a whole are net amounts. This includes the Tennessee River and tributaries which are not itemized. Freight volumes which moved on more than one basin waterway are counted only once. Such volumes, however, are included in the amounts for each individual basin waterway below.

Source: Corps of Engineers, U.S. Army

Most of the remaining facilities along the Ohio River are anticipated to be inadequate by the year 2020. Some of these inadequacies may be addressed in the National Systems Analysis for all modes of transportation currently being led by the Department of Transportation. All water transportation needs will be considered by the National Waterway Study to be completed by Army's Institute for Water Resources in 1981.

THE TRIBUTARIES

There is no substantial support or demonstrated need for lengthening the existing navigation system on the Ohio River tributaries that have been improved for navigation (lower Allegheny, Kanawha, Kentucky, Green, and Cumberland). There is renewed interest in commercial navigation on the Big Sandy as evidenced by the recently initiated study by the Corps of Engineers.

Several tributaries currently need or are projected to need system capacity improvements and/or replacement of obsolete facilities. The Commission has recommended replacement of Grays Landing Lock and Dam and Point Marion Lock on the Monongahela River. Other tributaries, including the Allegheny, Cumberland, Kanawha, and Green, are projected to experience an increase in barge traffic and may require some improvements by the year 2000. No future improvements have been identified for the Kentucky River.

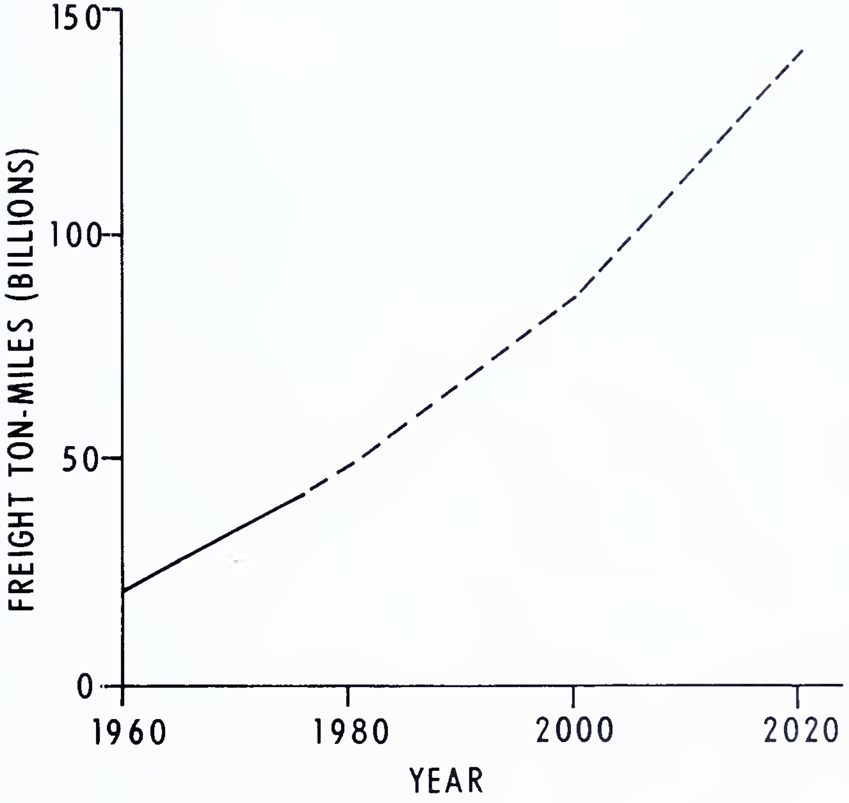


FIGURE 11. HISTORICAL & PROJECTED TRAFFIC OHIO RIVER BASIN NAVIGATION SYSTEM

WATER QUALITY

The water quality of the Ohio Basin has improved significantly over the last several decades. There are basically three kinds of water quality problems affecting the streams of the region: municipal and industrial point source; mine drainage; and runoff from the land (non-point source).

Acid and sediment mine drainage are problems throughout the coal fields, and are most acute in the Monongahela and Allegheny Basins. This issue is discussed in the Policy Issues Section.

In spite of the fact that almost all municipalities currently have some form of treatment, the current level of wastewater treatment is generally not adequate to fulfill the requirements of federal law. While the basin has 11 percent of the Nation's miles of streams, it has 15 percent of the miles of streams which require more than minimum wastewater treatment levels to meet stream water quality standards. Municipal wastewater treatment facilities constitute 793 of the 1,233 projects which the Commission recommends in its plan. It is estimated that the remaining costs associated with accomplishing these treatment facility improvements is $3.2 billion. Based on past appropriations and monies actually spent for work accomplished, it is questionable whether all of these facilities will be constructed within the next five years. Further, an analysis has not been made to date on the effects on water quality associated with construction of these projects. Often the existing stream water quality data consist of a few samples a year and are, therefore, inadequate to describe the current extent of the problem or effects of the abatement measures. However, much improvement has already been noted.

THE OHIO RIVER

Along the Ohio River, virtually all of the sewered population has some form of treatment, although only half of these facilities currently meet the standards of the 1977 Clean Water Act. In 1948, less than one percent of the municipalities had wastewater treatment and few, if any, industries had adequate treatment. When the treatment plants currently under construction are operating, the historical problem of dissolved oxygen will have been abated. The best indication of the improvement in water quality in the Ohio River is that pollution-sensitive fish are becoming more common. Also, West Virginia and Kentucky are now stocking Ohio River waters with game fish. Data on the types and levels of organic substances are being measured by ORSANCO in conjunction with their organics monitoring network program. First-year results on the Ohio River and lower reaches of major tributaries indicate low concentrations of organic substances in river water that are well below the standards set to date. The Commission has determined that a non-point source control program to meet water quality standards on the Ohio River is not needed.

THE TRIBUTARIES

Significant water quality problems exist in the Monongahela, Mahoning, and Kanawha Basins. These problems are associated with the industrial complexes which generally are old, less efficient facilities and which could experience a severe economic dislocation in meeting the requirements of the law.

More than 75 percent of the basin's population currently served by sewers has secondary or higher levels of treatment. However, slightly less than half of this population needs improved treatment to meet the requirements of the law. Control of industrial wastes has been more successful, with 70 percent of the industrial dischargers currently providing adequate treatment. (See Figures 12 and 13)

Much concern has recently developed over the effect of run-off from the land, referred to as non-point source pollution. Some problems have been noted on the tributaries; however, the extent of the problems and the type of control to abate them has not yet been defined. A discussion of this aspect of water quality is in the Policy Issues Section.

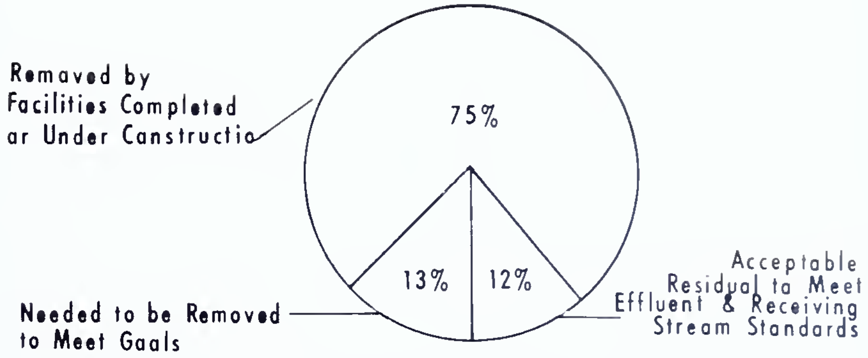


FIGURE 12. STATUS OF MUNICIPAL SEWAGE TREATMENT FACILITIES IN REMOVING DECOMPOSABLE ORGANIC POLLUTANTS

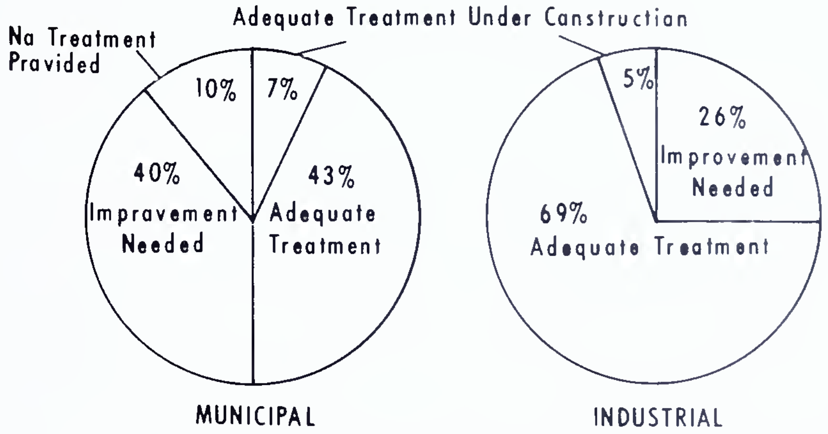


FIGURE 13. WASTEWATER TREATMENT AS PERCENT OF FACILITIES WITH ADEQUATE CONTROL

ENERGY

The Commission has concerned itself with the water needs and problems associated with three aspects of energy: thermal electric generation; hydroelectric generation, and synthetic fuel development. Because the Ohio Basin has abundant water, an economical navigation transportation system, and currently produces 70 percent of the bituminous coal in the United States, it is looked on as a location for solving some of the energy problems through the exploitation of coal.

THERMAL ELECTRIC ENERGY

The amount of electric energy capacity in the Ohio Basin is expected to increase 3.3 times between 1975 and 2000, while the basin's share of the Nation's electrical production is expected to decrease from 16 to 12 percent. Currently, about half of the generating capacity in the basin is located along the Ohio River, the remainder in the tributaries. Through the year 2000, this ratio is not expected to change significantly. Figure 14 illustrates the location of existing thermal electric and hydroelectric facilities in the valley, while Figure 15 illustrates, by subregion, the change in generating capacity in 1975 and 2000. This increased production of electricity will cause an associated increase in coal mining, water transportation, and consumptive use of water. The needs for coal are discussed under Coal Resources (page 52); while the needs for transportation are discussed in the Transportation Section.

Consumptive water use is expected to increase over four times. The increase in water is greater than that in generating capacity because all new thermal generating plants are anticipated to have cooling towers whereas many of the existing facilities simply use the flow of the streams to dissipate their heat. Almost half of this consumptive use of water could be conserved and saved for other uses if power plants along the Ohio River were required to have cooling towers only when water quality stream standards so dictated.

The Commission has recommended that power companies in the Ohio River Basin should continue to meet the needs of their traditional market areas, and that export of energy should be in the form of coal rather than electricity. The Commission has also recommended that new power plants on the Ohio River should not automatically be required to construct offstream cooling facilities. The need for offstream cooling at each power plant should be determined by a thorough analysis of effects on water quality and other aspects of the environment at each site.

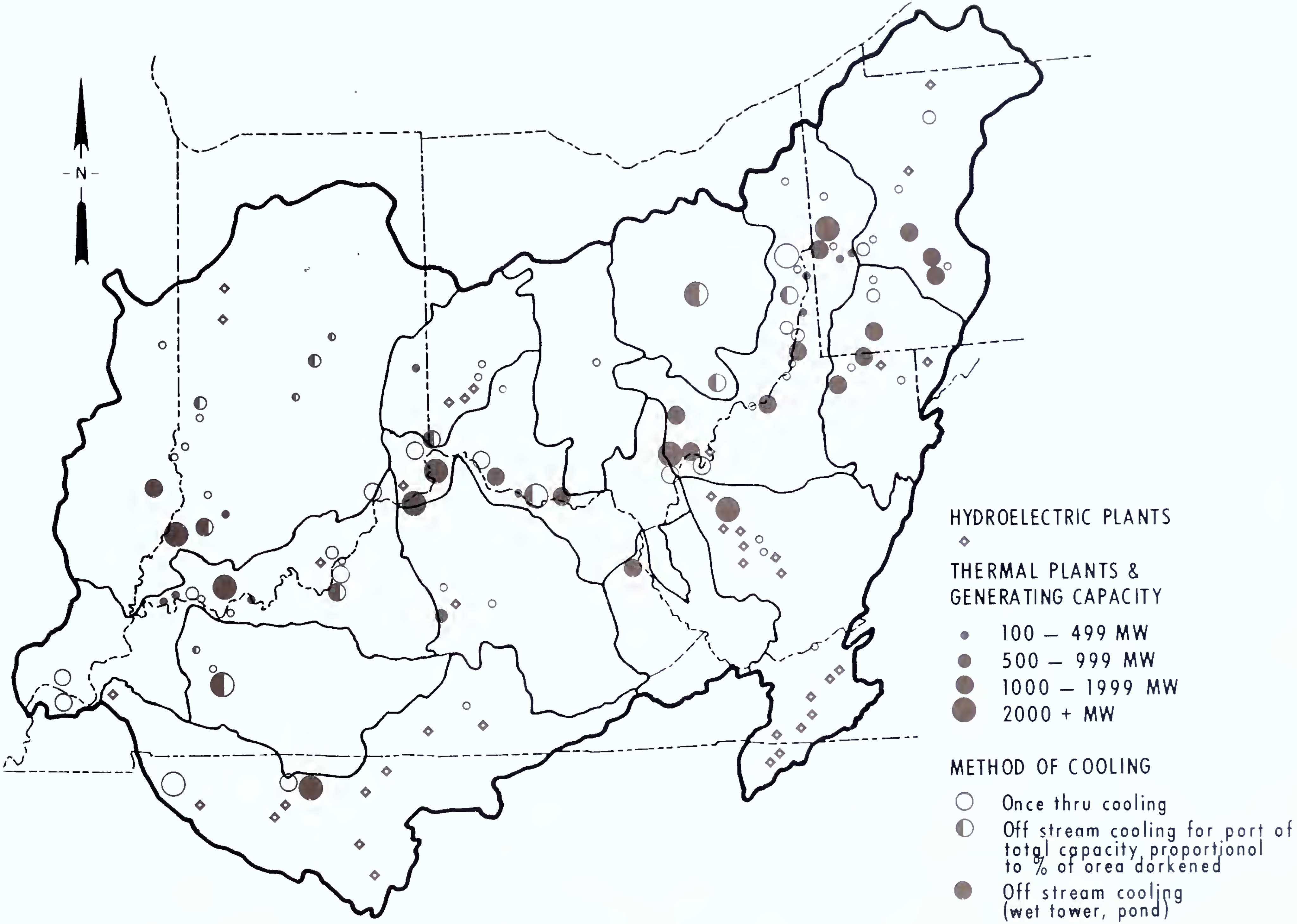

N
HYDROELECTRIC PLANTS
◇
THERMAL PLANTS & GENERATING CAPACITY
● 100 — 499 MW
● 500 — 999 MW
● 1000 — 1999 MW
● 2000 + MW
METHOD OF COOLING
○ Once thru cooling
◐ Off stream cooling for part of total capacity proportional to % of area darkened
● Off stream cooling (wet tower, pond)

FIGURE 14.

ELECTRIC GENERATING STATIONS

OPERATING AND UNDER CONSTRUCTION

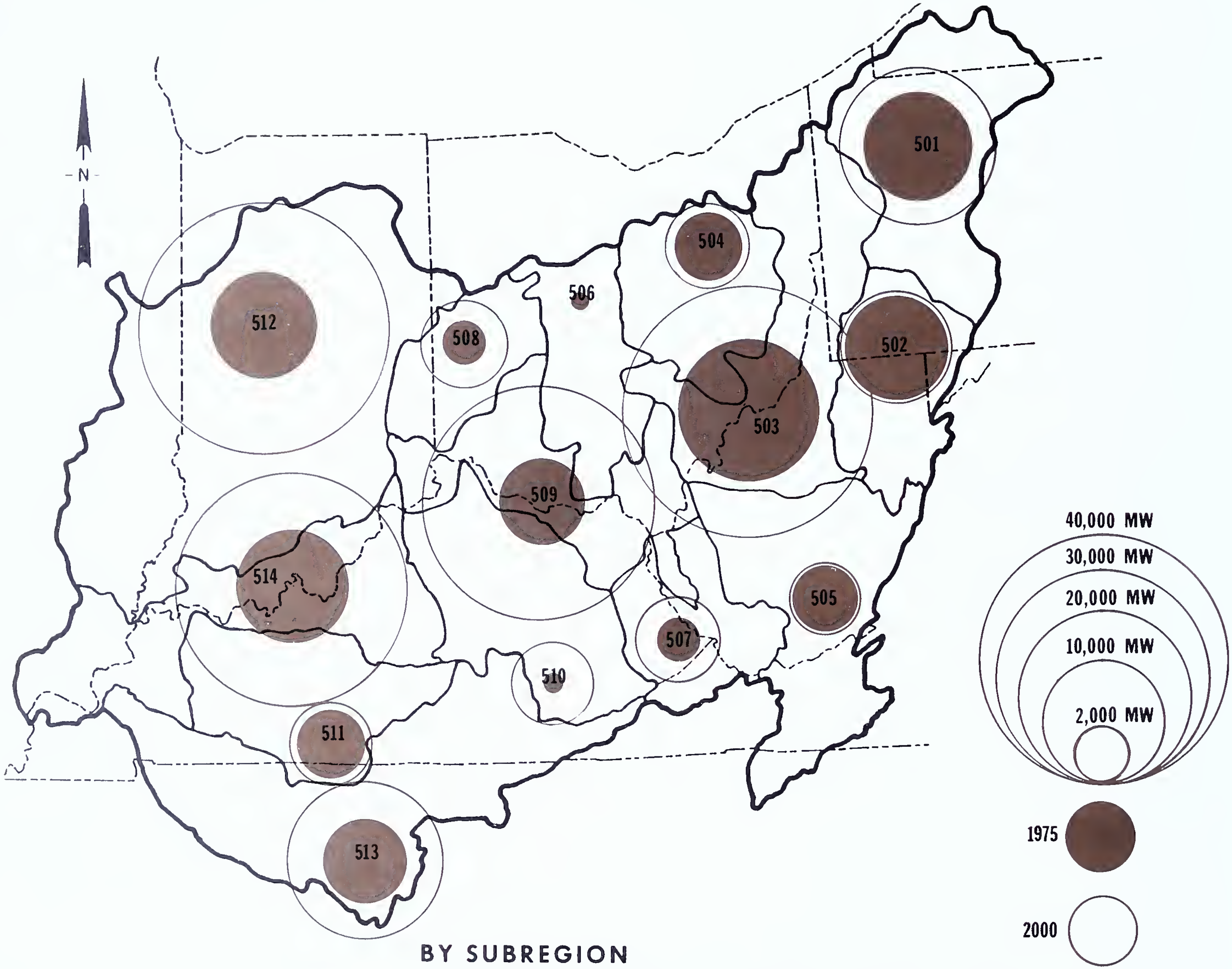


FIGURE 15.

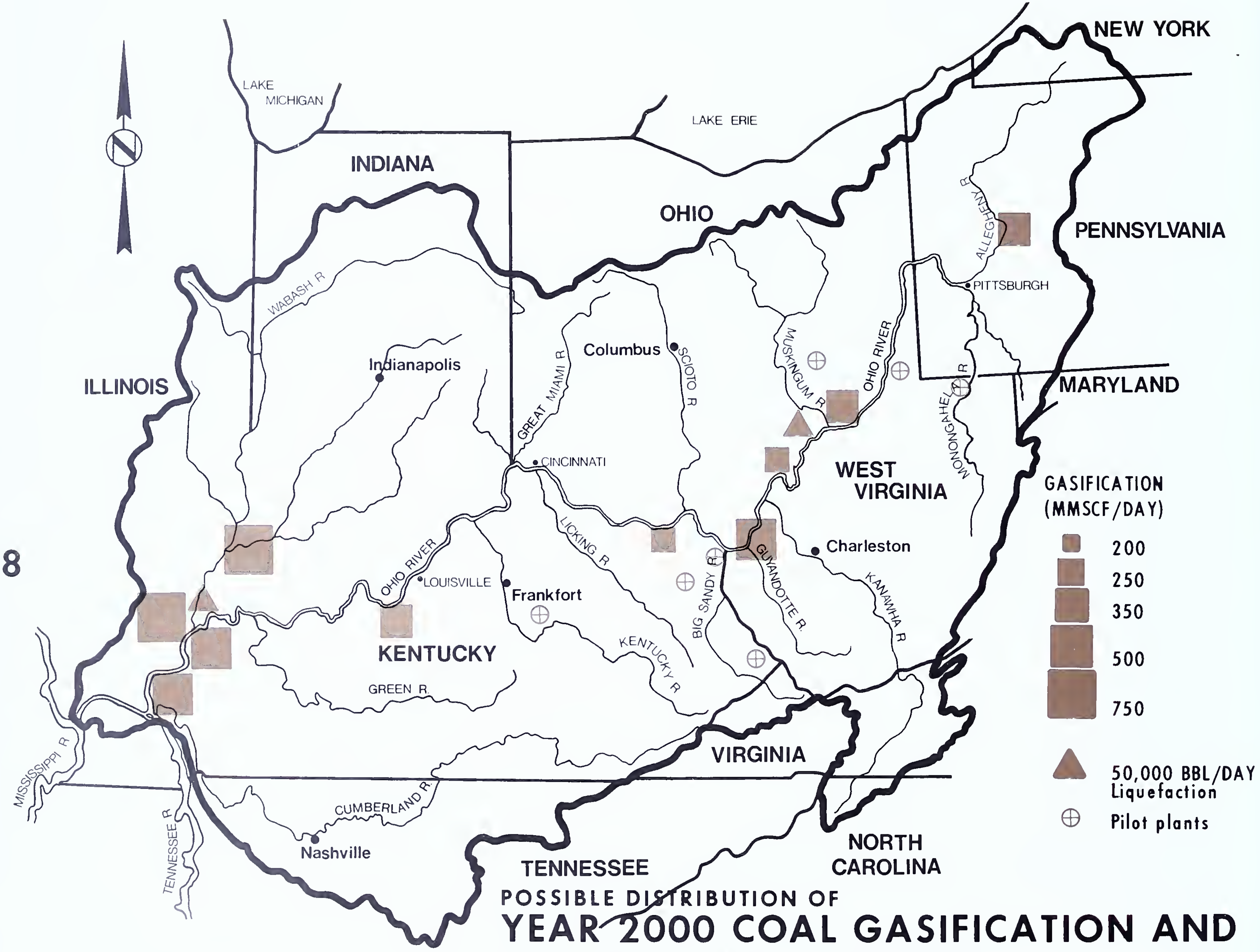
BY SUBREGION
GENERATING CAPACITY 1975/2000

HYDROELECTRIC POWER

Hydroelectric power provides an efficient non-polluting energy source. The river energy that is transformed into electricity through the hydro turbine would be expended through the natural stream flow whether or not the dam and turbine were there. Further, this amount of energy is continually being replenished and is not depletable as are coal and oil. The Ohio River Basin currently has 1,400 megawatts (MW) of hydro power facilities and potential for an additional 4,000 MW. An additional 4,300 MW of new hydro capacity could be feasible if pumped storage units are installed to store energy during periods of low demand for release during high-demand periods. Traditionally, hydro power facilities that are federally-funded have been developed only when there are economic advantages compared to conventional steam plants. The cost of fossil fuels is making additional potential hydro power facilities economically attractive in the region. This is because the energy costs for such facilities are related totally to the construction and maintenance of facilities and not dependent on increasing fuel prices.

Because of the change in energy balance and price in the United States, all of the Ohio Main Stem high-lift dams, except Dashields, are now economically attractive potential projects; the Commission has recommended that the development of hydro power at these sites be pursued. More hydro power resources are either at existing dams where there are sufficient flows or at sites in the Appalachian Plateau where sufficiently high dams could be built.

Generally, there are two adverse effects related to hydroelectric projects. The first is the obvious problem of building reservoirs. The second is associated with the release of water through the turbines. Problems here generally relate to water quality.



POSSIBLE DISTRIBUTION OF
YEAR 2000 COAL GASIFICATION AND LIQUEFACTION FACILITIES

FIGURE 16.

SYNTHETIC FUELS FROM COAL

The development of coal conversion facilities is anticipated to alleviate shortages in natural gas and petroleum. To accomplish this, large coal conversion plants would be required. The Commission has had a number of studies which analyzed the effects on water from the development of this industry in the Ohio Basin. Projections for such development indicate that over a dozen such major facilities might be developed in the basin by the year 2000. The amount of coal required for such facilities would range from 50-100 million tons of coal per year. For comparison, 450 million tons of coal are currently mined in the basin. An equally important impact of this potential development would be on water use. The consumptive use of water for such development could range from 150 cubic feet per second (cfs) to over 360 cfs. This amount of water is very small compared to the total anticipated uses in the basin of 3,000 cfs currently, and a projected 6,600 cfs by the year 2000. Figure 16 shows one of the possible distributions of synthetic fuel facilities. As indicated on this map, it is likely that most such facilities would be located along a waterway in the basin where there is ample water supply and low cost barge transportation.

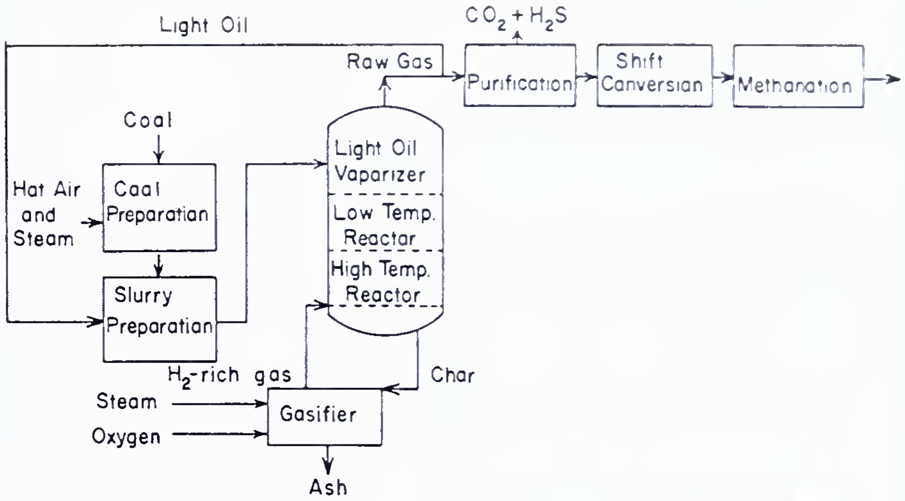


FIGURE 17

FLOW DIAGRAM OF SYNFUEL PLANT

RECREATION

Wide variation in both the amount and type of recreation activity is, like economic and social conditions, largely influenced by the physical characteristics present in the basin. The three major physiographic provinces of the basin — the Appalachian Plateau, the Central Lowlands, and the Interior Low Plateau — are characterized by major differences in topography, water availability, and natural resource characteristics. The natural advantages that predominate in portions of the Appalachian and Interior Lowlands provinces have made them highly suitable for the location of a variety of natural and developed recreation activities (Figure 18).

For the most part, however, the portions of these regions where the bulk of recreation activity takes place do not coincide with where most of the people reside. Seventy percent of the people reside north of the Ohio River where industrial centers and heavy agricultural activity are located. On the other hand, the varied topography and less developed land south of the river contains the natural features conducive to quality outdoor recreation. This area has 70 percent of the surface water acreage (including the Ohio River). This imbalance in supply and demand is aggravated by the fact that the heaviest demand for recreation activities occurs within 50-100 miles of the population centers.

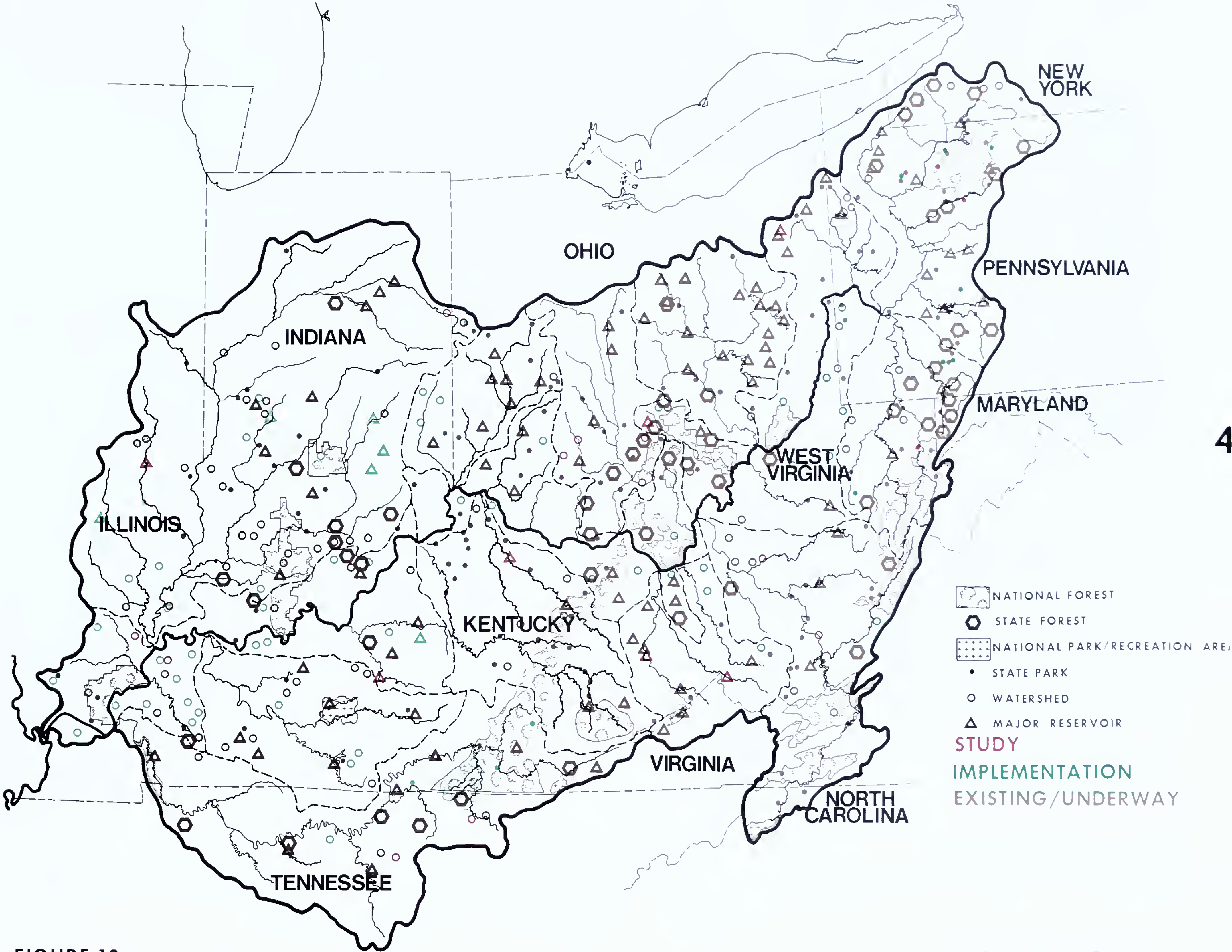


FIGURE 18.

RECREATION PLAN

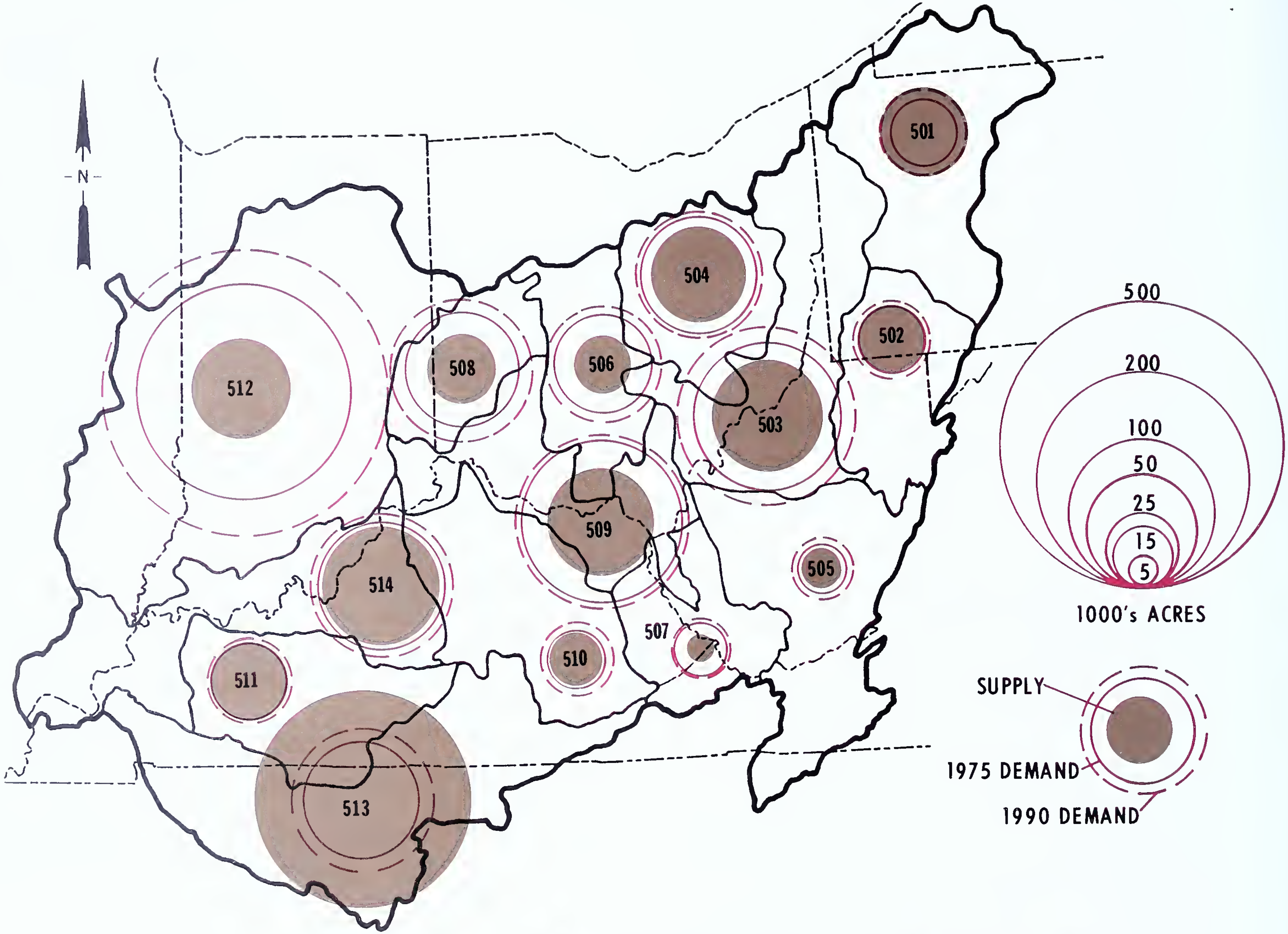


FIGURE 19.

RECREATION SURFACE WATER SUPPLY & DEMAND

The prime restricting factor in the development/preservation of recreation facilities in the more populated areas of the basin has been the limited availability of suitable open space and natural resource conditions necessary for the development of natural or man-made streams and lakes, parks, and fish and wildlife areas, and for the preservation of natural areas. Satisfactory sites available for this development and preservation are not, for the most part, sufficient in number or size to meet existing, let alone projected, demands. Figure 19 describes the existing and year 1990 recreation surface water demand/supply conditions for the 14 hydrologic subregions within the basin. For perspective, the basin has 10 percent of the national surface water demand but only five percent of the existing supply. Discounting future demands, it is unlikely that the existing demand for boating and fishing will be met. This is due, in large part, to a combination of factors which include limited site availability and lack of economic justification, either for single-purpose projects or as a major part of multi-purpose projects.

It is questionable whether there is sufficient information to determine whether the demands for camping, swimming, picnicking, hiking and nature study will be met.

The Commission's plan contains a number of recommendations for projects including state, local, and regional parks and multi-purpose projects that will satisfy a portion of this demand.

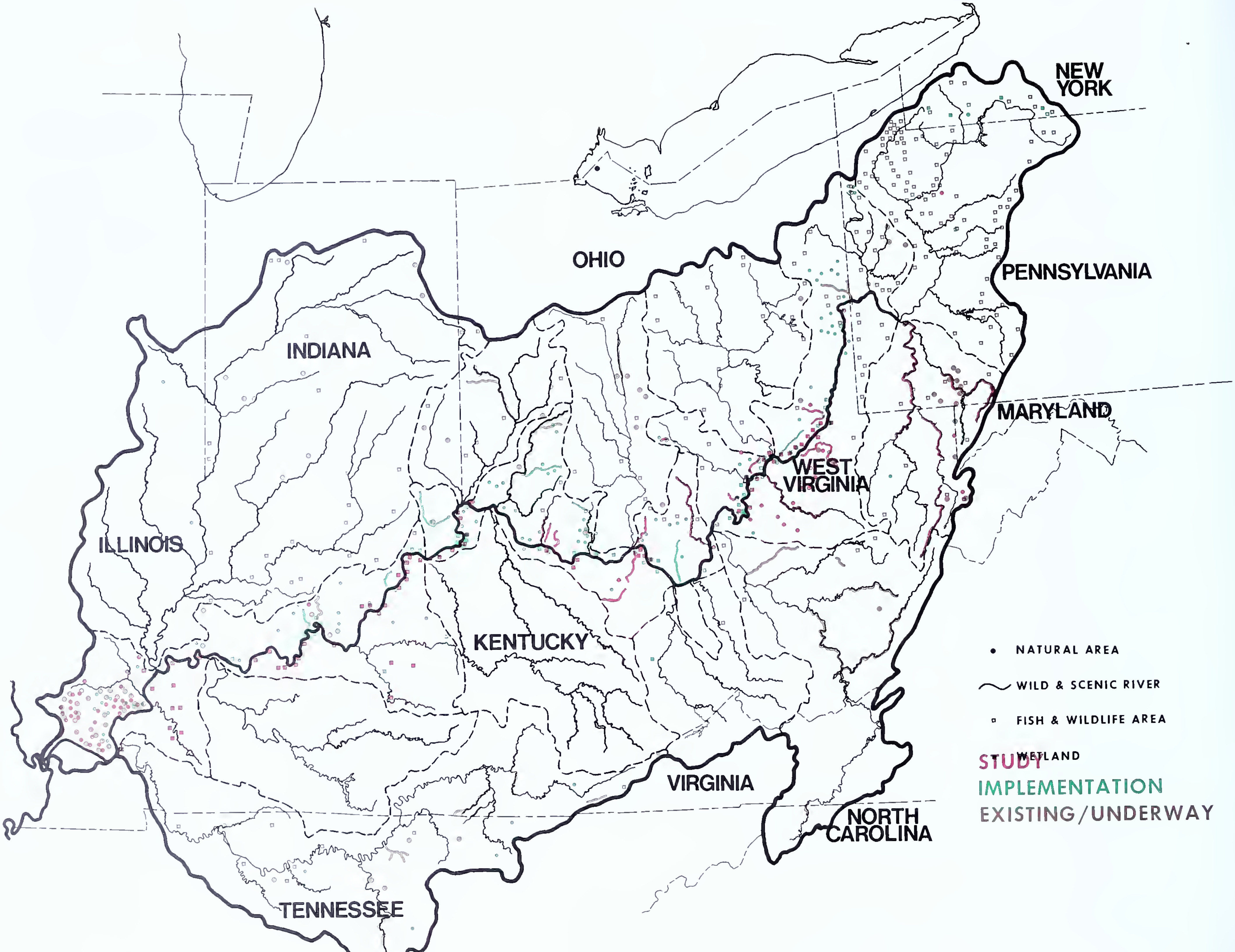


FIGURE 20.

NATURAL ENVIRONMENTAL PLAN

NATURAL ENVIRONMENT

The previous section described the relationship between the supply and demand for intensive recreation activities. An equally important aspect of human recreational activity is that which occurs through visits to an uncrowded natural environment. The preservation of natural environment areas is essential to insure that a sufficient number of these areas are available for man in perpetuity. Projects which the Commission has recommended to address these needs include: wild rivers, scenic rivers, natural areas, nature preserves, wetlands, fish and wildlife management areas, and environmental corridors. Figure 20 illustrates the Commission's plan to date. In its proposed environmental study of the entire Ohio River Basin, the Commission recommends that, among other concerns, the following considerations and questions be addressed: how many of these areas are actually needed; what type; and how much for satisfying the total human needs. ORBC's recommendations to date have been primarily based on the quality of the resources and do not include the question of how preservation of a resource meets human needs. By combining these two aspects for the need and value of these areas, it is felt that success of a program to set aside such areas will be greatly enhanced.

Unlike development-type projects, the cost of natural areas is generally just the cost of the land. This is primarily because the very quality which makes these areas aesthetically pleasing and valuable environments also makes them poor choices for development. For example, wetlands along the Ohio River could be preserved through the permit process at little cost. However, preventing development does not automatically translate into public access. These wetlands are also the poorest construction sites along the Ohio River. No major land use conflicts between environmental areas and agriculture, forestry, and development are expected.

LAND RESOURCES

LAND USE

Major land uses in the Ohio River Basin are illustrated in Figure 22. More than 90 percent of the region's 104 million acres (5.3 percent of the total land area in the U.S.) is currently devoted to agriculture and forestry. Between now and the year 2000, competition for land will result in a loss of some 500,000 acres of forest land while it is expected that demand for acreage devoted to urban uses will increase by approximately two million acres. Figure 21 describes the projected changes in land use between now and the year 2000. This increasing pressure on the basin's land resources will require adjustments in resource development and additional multiple use patterns beyond those now practiced.

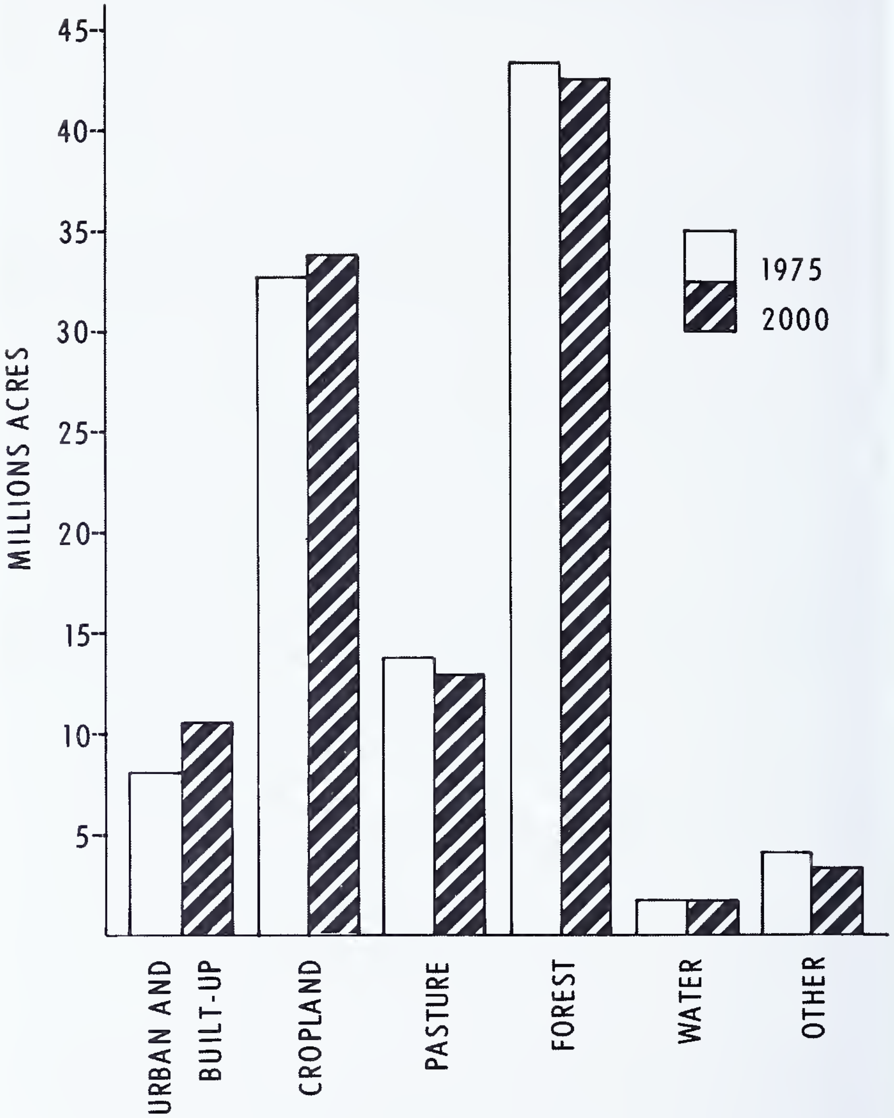


FIGURE 21 PROJECTED CHANGES IN LAND USE

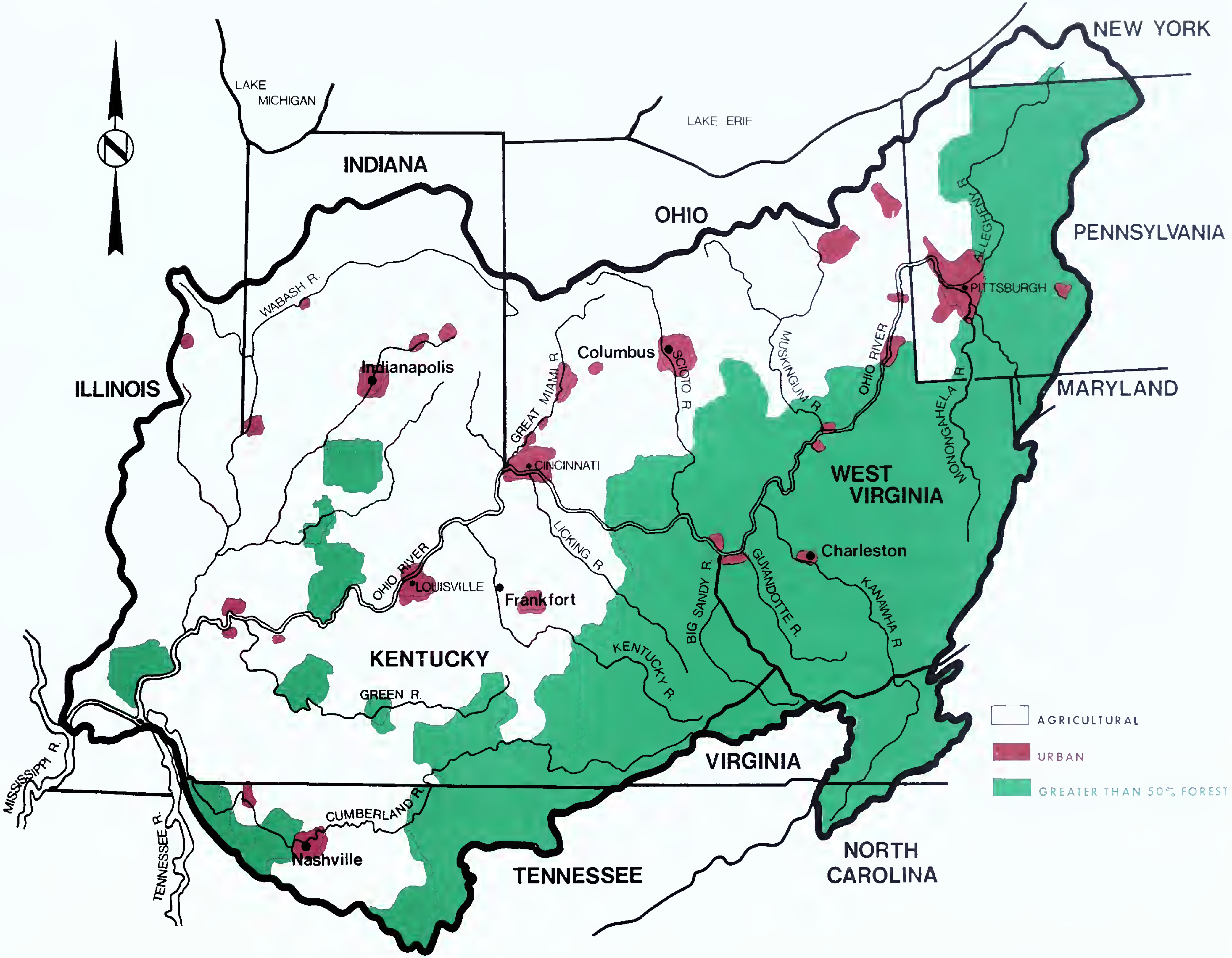


FIGURE 22.

GENERALIZED LAND USE

FOREST

Forest land in the Ohio River Basin, located predominately in the Appalachian Plateau portion of the basin, accounts for 42 percent (44 million acres) of the region's total land area. Approximately 99 percent is classified as commercial forest land, or as land which is either producing or capable of producing crops of industrial wood and is not withdrawn from timber utilization. The commercial forest land is usually found in the rural sector and used for multiple purposes such as timber production, recreation, wildlife habitat, watershed protection, livestock grazing, and aesthetics. Between now and the year 2000, forest land is projected to decrease by some 500,000 acres.

Ninety-seven percent of the forest volume consists of hardwood. Comparisons of demands for harvest of these woods relative to the rates of growth indicate that the growth of new timber will continue to exceed harvest through the year 2020. The predominant forest type is oak-hickory.

Proper use, management, and protection of forest land is essential for sustained yields of forest products, watershed protection, recreation, fish and wildlife habitat, and aesthetics. To maintain and improve the forest land, the following land treatment measures have been considered necessary: tree planting; timber stand improvement; logging road and skid trail erosion control; fire control; urban and environmental forestry, and grazing reduction or elimination.

There are areas within the basin where grazing is detrimental to the improvement of forest land. Livestock on forest land are detrimental to the forest soil, water quality, hardwood reproduction, timber growth and quality, and wildlife habitat. Erosion damage and high sediment yield is greatest on steeper slopes, intensively grazed areas, and on soil associations with high erosion hazard.

National forest land accounts for only a small percentage of the commercial forest land in the basin. There are nine national forests in eight of the 11 basin states. In addition, there are a number of state forests and noncommercial forest lands in national, state, county, and municipal park ownership. While not significant from the timber standpoint, noncommercial forest lands do have substantial values in contributing to the water and wildlife resources in addition to recreation and natural beauty.

AGRICULTURE

The Ohio River Basin contains portions of 19 land resource areas, each characterized by similar climate, topography, soils, and other factors (Figure 23). These areas are grouped into four national land resource regions. Agricultural conditions are especially favorable in two of these regions – the Lake States Fruit, Truck, and Dairy Region and the Central Feed Grains and Livestock Region. A major portion of the basin's agricultural crop and livestock production occurs in this area, while dairy and poultry dominate the production picture in the more heavily forested eastern areas of the basin. Over half of all crops produced in the Ohio Basin are feed crops (corn, oats, and hay). The principal food crops are wheat and soybeans. Tobacco is an important revenue producing crop.

Agriculture is one of the principal enterprises in the Ohio Basin with 49 percent of the land devoted to cropland and pasture. Thirty-five percent of the area is used as cropland with varying degrees of intensity; 14 percent is in pasture consisting of improved grasses as well as native vegetation. A modern soil survey is available for a third of the basin's counties.

Slightly more than one-fourth (28 million acres) of the basin is prime agricultural land. This land constitutes eight percent of the U.S. total. Loss of prime agricultural land in the basin amounts to 2,000 to 3,000 acres per year.

Efficient use of land and water is fundamental to proper management of these resources. Establishment of necessary treatment measures on the land is vital if we are to continue to meet food and fiber demands.

The main conservation problems on cropland are controlling erosion and inadequate drainage. In addition, there are areas of cropland throughout the basin which should be converted to other uses such as pasture and/or forest to improve the land cover.

The types of measures needed to treat the cropland to keep the soil losses within allowable limits are those providing a high degree of runoff retardation and those resulting in reduction of erosion and sedimentation. The application of best management practices for agriculture will help keep non-point source pollution to a minimum, particularly in upstream tributary areas, as well as enhance environmental quality and maintain the productivity of the land.

With very limited additional land available to agriculture in the basin, greater food and fiber demands must be met by wise use, treatment, protection, and management of existing resources. The quantity of land needed is also dependent on crop yields and intensity of land use. Both crop yields and land use are affected by resource development measures such as erosion control, flood protection, drainage, and irrigation. Land use becomes more intense and crop yields are increased by application of these measures.

The Department of Agriculture is conducting a special study for the Commission to identify the basin's capability to produce food and fiber and the effects of such production on the soil and water resources.

The Commission recognizes the limitations on future agricultural activity in the basin and has recommended that an accelerated land treatment program be implemented.

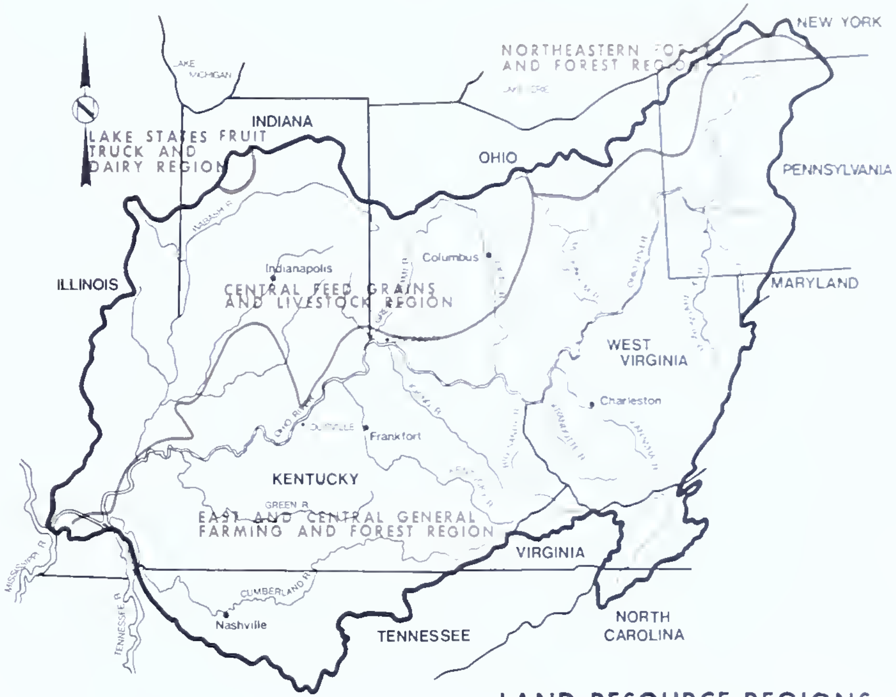


FIGURE 23

LAND RESOURCE REGIONS

COAL RESOURCES

The Ohio River Basin currently produces 70 percent of the bituminous coal in the United States and has more than 60 percent of the remaining recoverable coal reserves. Figure 24 is a map of the Ohio Basin showing the two major coal provinces in the basin.

The Ohio River Basin portion of the Eastern Interior Coal Province in Indiana, Illinois, and Kentucky has an estimated recoverable reserve of 23 billion tons. In 1975, 103 million tons were mined, 60 percent by area stripping.

The Appalachian Coal Province in Kentucky, Maryland, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia has an estimated recoverable reserve of 110 billion tons. In 1975, 344 million tons were mined, two-thirds of which were obtained by deep mines and one-third by strip and auger mining. Area stripping is prevalent in the northeastern Ohio and Pennsylvania portions, whereas contour strip and auger mining are prevalent in southeastern Ohio, Tennessee, West Virginia, and eastern Kentucky.

At the current rate of production of nearly 450 million tons of coal being mined each year, it is projected that the estimated recoverable reserves in the basin will last another 300 years. At the year 2000 rate of production (estimated at over 900 million tons per year) reserves are expected to last about 150 years.

It is estimated that in the Ohio Basin, over 1.2 million acres of land have been disturbed by surface mining for coal.

Drainage from both deep and surface mines can cause water quality problems. Of the 13,000 miles of streams significantly affected by mine drainage in the United States, it is estimated that 10,070 miles lie in the Ohio Basin.

The Ohio River Basin states now have active mine pollution abatement programs for existing mines generally via a permit and enforcement process. However, there still remains the problem of acid water emanating from abandoned mines. This problem is discussed in the Policy Issues Section.

In addition to acid drainage problems, abandoned mines contribute to problems of land subsidence resulting from mine roof collapse. Subsidence not only becomes a geologic hazard, but also results in water-related problems. Such problems have occurred in areas where the propagation of mine subsidence fissures traverses overlying water-bearing materials and induces subsurface drainage of water from existing wells. Locally, these fissures may permit the migration of poor quality water and the diversion of surface water to abandoned mines — increasing the mine-flooding hazard.

In 1975, fossil electric generation produced 298,000 Gigawatt hours (GWh). Assuming all of this was produced by coal, approximately 140 million tons of coal was required. By the year 2000, 530,000 GWh are anticipated to be produced by fossil fuels. This would require 246 million tons of coal per year. Projections for synthetic fuel would require 50-100 million tons of coal per year.

The Ohio framework study (Ohio River Basin Comprehensive Survey) projected coal production for the region of 574 million tons per year in 1980, 919 million tons per year in 2000, and 2,760 million tons per year at 2020. If the basin were to continue to produce 70 percent of the Nation's coal and meet the Administration's announced goal of 1,200 million tons per year in 1985, the basin share would be 840 million tons, which is higher than the framework study projections. The identification of transportation problems relative to the movement of coal are based on the framework projections. The amount of coal required for electricity and synfuels production is well within the framework projections. In 1975, 95 million tons of coal moved on the Ohio River waterways as compared to the 447 million tons mined. Further, in 1975, one-third of the coal mined in the region was used for electricity; by the year 2000, one-third is expected to be used for electricity and synfuels, the remainder to be used directly by industry and for export from the basin.

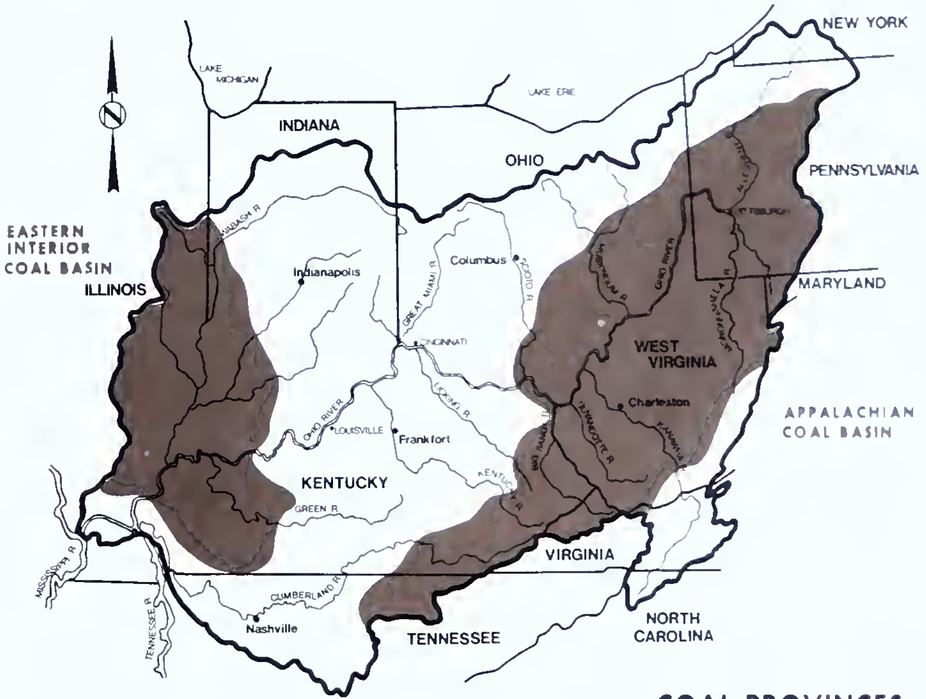


FIGURE 24.

COAL PROVINCES

PROJECTS & PROGRAMS SUMMARY

The numbers of projects currently recommended by the Commission, as well as those existing and underway, are displayed in Table 6, by type of project and subregion. Also shown is the total gross estimated cost of the recommended projects by category. When this information is compared to the needs of the various subregions, the rationale for the plan becomes more apparent. For example five of the seven major reservoirs recommended by the ORBC are in the Wabash Subregion which currently has the worst remaining flood problem. A similar comparison can be made for local protection projects; however, it should be noted that the numbers of watershed projects recommended in the Wabash Basin are not as large as in some subregions. This is primarily because the Wabash currently has more existing and underway watershed projects than any other subregion; thus the total of what has been accomplished, is underway, and is recommended corresponds to the total need.

The distribution of other kinds of projects relates to either the natural resources or the work that has been accomplished to date. For example, the majority of hydro power projects are in the Kanawha and Cumberland Basins. These areas have high relief and are more suitable for hydro power than the low-relief subregions north of the river.

The natural areas, wetlands, and fish and wildlife areas are more evenly distributed when the recommended and the existing are combined. However, this distribution is still somewhat uneven due to the difference in terrain. Again, the areas in the Central Lowlands have less diverse terrain and, therefore, fewer natural areas. Additionally, the lack of proposed projects in this category is related to the amount of effort expended to date and is a primary reason why the Commission is pursuing an environmental study of the entire Ohio Basin.

Finally, the Commission's plan recommends 350 general and specific-project studies to assist the ORBC in determining what additional actions should be recommended. Not all of these projects, programs, and studies are recommended to be accomplished next year. The Commission's Priorities Report groups these recommendations into three priority time frames: 0-5 years, 6-15 years, and beyond 15 years.

Table 6. PROJECTS AND PROGRAMS SUMMARY

(Numbers of Projects and Estimated Cost of Recommended Plan)

Project Category	501-Allegheny	502-Monongahela	503-Upper Ohio	504-Muskingum	505-Kanawha	506-Scioto	507-Big Sandy/ Guyandotte	508-Great Miami	509-Middle Ohio	510-Kentucky/ Licking	511-Green	512-Wabash	513-Cumberland	514-Lower Ohio	Total Number	Est. Total Cost of Recommended Plan (in millions)
	Recommended Potential Projects/Existing and Underway Projects															
Recreation Area (1)	14/81	10/130	42/63	0/13	0/48	0/63	0/11	0/49	16/23	0/21	0/29	7/232	0/95	18/94	107/952	$ 375
Natural Area	0/0	5/19	32/11	0/2	0/7	0/8	0/0	0/4	36/5	0/0	0/0	3/29	2/5	24/41	102/131	30
Wetland and Fish and Wildlife Area	6/60	0/11	27/26	0/16	0/6	0/8	0/4	0/5	18/9	0/5	0/0	0/14	0/5	18/11	69/180	34
Wild and Scenic River	0/0	1/0	1/1	0/0	0/6	0/1	0/0	0/1	5/1	0/1	0/1	0/0	0/9	2/1	9/22	R (2)
Major Federal Reservoir	0/10	1/3	0/6	0/15	0/3	0/4	0/7	0/2	0/6	0/5	0/4	5/8	0/8	1/1	7/82	550
Major Non-Federal Reservoir (3)	0/11	0/3	0/8	0/6	0/2	0/3	0/1	0/10	0/1	0/1	0/1	0/23	0/4	0/3	0/77	0
Local Protection Project	9/29	1/24	5/31	3/5	0/6	1/5	1/15	6/14	2/12	1/4	0/8	13/80	1/4	2/27	45/264	72
PL 566 Watershed and RC&D Project	0/6	2/9	17/19	1/1	5/10	2/1	6/2	3/1	7/0	2/7	10/14	8/29	5/9	28/10	96/118	370
Lock and Dam	0/8	2/9	0/9	0/0	0/3	0/0	0/0	0/0	1/4	0/14	0/8	0/0	0/4	0/7	3/66	265
Thermal Power	0/8	0/7	0/21	0/2	0/4	0/1	0/1	0/4	0/9	0/3	0/3	0/29	0/4	0/13	0/109	0
Hydro Power	0/2	0/2	0/1	0/0	0/12	0/0	0/0	0/3	1/1	0/2	0/0	0/2	0/8	1/1	2/34	68
Municipal Sewage Treatment Plant															793 (Recommended)	3,204
Agricultural/Forest Land Treatment															Program	2,300
Acid Mine Drainage Abatement/Reclamation															Program	1,900
TOTAL ----------															1233/2035	$9,168

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(1) Recreation areas include state and regional parks, historical sites, and access areas.
(2) Considered to have no capital cost; regulation only.
(3) Existing reservoirs with total storage of at least 10,000 acre-feet.

IMPACTS

This section summarizes the overall environmental, economic, and social impacts of the Commission's plan (contained in 15 volumes — this document and one for each of the 14 Ohio River Basin subregions).

When a Level B study of a subregion is conducted, the analysis of the impacts is included as an integral, nonseparable part of the planning, and the recommended subregional plan is presented as a combined CCJP/Environmental Impact Statement. Such reports outline the subregional impact of the recommended plan. As each Commission member pursues the recommended plan, a more detailed environmental assessment will be prepared for each project and program during its detailed planning, and an environmental impact statement will be prepared when required.

What follows is a presentation of how the region will change as a whole due to the recommendations contained in the Commission's plan. Considering the beneficial and adverse environmental effects which will result through implementation of the plan, the overall environment of the basin will be enhanced, economic development will continue, and the overall social well-being of the people of the basin will be improved.

ENVIRONMENTAL

1. Environmental impact of the proposed action: Analysis of the beneficial and adverse impacts associated with the Commission's recommended plan for the Ohio River Basin indicates that substantial beneficial impacts are expected to occur as a result of implementation of the recommended projects and programs. The plan emphasizes environmental quality improvement and, as a result, contributes to only minor adverse impacts. The beneficial and adverse impacts identified represent a description of the general types of impacts likely to result, based on the analysis of existing information contained in the Commission's overall plan for development in the basin.

Among the projects recommended, there are a number of measures that provide for flood protection, water quality improvement, land treatment, recreation, water supply augmentation, and preservation or enhancement of free-flowing streams, natural areas, and fish and wildlife habitat. For example, recommended structural flood damage abatement measures would offer protection to both urban and rural flood plain lands, reduce the threat to life and property, and provide for more efficient use of land. In addition to the structural recommendations, there are a number of nonstructural measures that are expected to provide substantial beneficial impacts. The combination of the municipal waste treatment program, the abandoned mine drainage abatement program, and land treatment measures would improve water quality levels and help improve stream water quality by reducing sediment and turbidity. The improved water quality would provide for more favorable conditions for fish and wildlife enhancement and for general recreational use of the streams in the basin. Implementation of plan recommendations would also provide for additional water surface acreage which would be available to augment water supply and provide additional recreation opportunities. Protection and preservation of unique and scenic environmental areas would provide additional opportunities for nature study and recreation throughout the basin.

2. Any adverse environmental effects which cannot be avoided should the proposal be implemented:

Unavoidable effects associated with implementation of the plan include biological degradation and inundation of free-flowing stream reaches and loss of significant acreages of forest, cropland, pasture land, and rural residential land at impoundment sites. Most major reservoir and impoundment sites are generally located outside densely populated areas. The relocation of people would be a short-term adverse environmental effect. Also, some of the proposed stream channel modifications would have long-term adverse effects on stream fishery, wildlife, and aesthetics.

3. Alternatives to the proposed actions:

The alternative projects and programs selected for implementation status in the plan were judged by the Commission to be the best possible solution based on consideration of benefits, costs, environmental impacts, demands, and public opinion. A variety of alternatives has been identified for each major type of recommended action including major reservoirs, Public Law 566 watershed projects, local protection projects, water supply projects, domestic sewage facilities and orphan mine drainage abatement projects, and recreation facilities along with scenic rivers, natural areas, wetlands, and embayments. As each Commission member pursues the recommended plan, consideration of the alternative actions identified will help insure that the activity associated with the implementation and operation of each project will proceed in a manner that will maximize benefits at the least cost to the environment and the economy.

4. The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity:

The water resources management plan of the basin is considered to be a continuing program incorporating short-term management proposals and longer-term alternatives and guidelines for satisfying water-related needs. Proper land use is a key element for efficiently maintaining a desirable relationship between environmental well-being and economic well-being. The use of land for water management purposes as outlined in the plan should have few undesirable long-term implications for the people of the basin, its related service areas, and the Nation. Some minor long-term losses associated with some project construction and operation activity would occur to the existing environment. Overall, however, what is likely to occur as a result of implementation of the plan is an improvement in the long-term potential for both the economic and environmental well-being of the people in the basin.

5. Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented:

In order to implement the recommended plan, certain resource commitments would be required. Some of these commitments would likely be irreversible and irretrievable. Such irreversible and irretrievable effects associated with implementing the plan would include:

— At impoundment sites, wildlife habitat and land productivity consisting of forest, crop, grazing, residential, and miscellaneous uses would be lost. Permanently inundated land totals 75,000 acres, which is a 7.5 percent increase in surface water acreage and constitutes 0.07 percent of the total land in the basin.

— Impoundments would result in the loss of many miles of free-flowing rivers and streams, and wildlife species dependent on this habitat. Of the 60,000 miles of larger streams in the basin, 160 miles would be inundated by major reservoirs. An additional 370 miles of smaller streams would be inundated by watershed project impoundments.

— Channelization of 540 stream miles could result in a loss to existing fish and wildlife habitat.

— Scenic rivers would preserve in perpetuity the existing high quality scenic stream reaches. The 410 miles of streams to be preserved will double the existing miles of streams preserved.

— Ecological changes could be expected in streams impounded; evaluation of the degree of enhancement or degradation for various species of fish, wildlife, and vegetation cannot be reliably predicted without further study.

— Preservation of 83,000 acres of natural areas and 12,000 acres of fish and wildlife areas and wetlands will keep these high quality ecosystems available in perpetuity.

— Loss of income and tax revenue due to loss of land or change in land use, i.e., flood plain lands of high economic value for urban/commercial/industrial development may be reserved for uses having lower economic value.

— Some archeological, geological, and historical sites may be lost.

— Mining of economically extractable coal and mineral resources under recommended projects would be precluded. This is estimated to be less than 0.1 percent of the total resource.

ECONOMIC

There are three basic categories of economic impact which are of concern in such a plan as outlined in this report: costs to taxpayers of implementing the recommendations; return on investments; and regional impact of expending the funds in the first category.

Because this plan relied on the exercise of judgment from existing information and because detailed feasibility studies for each of the 1,233 potential projects recommended have not yet been done, some of the items in the recommended plan do not have definitive costs data. Further, many projects such as scenic rivers and wastewater treatment facilities do not have benefits calculated.

Estimated capital costs of projects with economically defined benefits is $1.7 billion, while the costs of those without defined benefits is estimated at $7.5 billion. Since most of the non-defined projects are the type which generally do not yield economic benefits greater than costs, it could be argued that the overall benefit/cost (B/C) ratio of the recommended plan is less than one. It is interesting to note that B/C analysis, after more than 40 years of application to government water resources programs, has still not been found acceptable or desirable for other government investments such as airports, highways, housing, and welfare. This is probably because these programs are considered desirable for their effects and are worth what they cost.

Similarly, many of the projects in the recommended plan have undergone benefit/cost analyses and have been found to have B/C ratios greater than one. However, the reasons they are recommended are to obtain desirable effects such as eliminating a severe bottleneck on the waterway, providing recreational opportunity, or enhancing and preserving the environment, and not just because the B/C ratios exceed one.

The capital costs of the recommended plan are estimated at $9.2 billion (Table 6, page 55). While at first glance this may appear large, it should be remembered that both state and federal governments originally entered the water resources business precisely because the investments were large and the returns accrued over long periods of time to large numbers of citizens. Some of the returns could be considered to continue occurring indefinitely as in the case of a natural area preserved for this and future generations. Also, assuming $1 billion for a 1,000 MW plant, consider that some $180 billion or so is anticipated to be spent for power generating facilities between 1975 and 2000.

The third category is particularly important to the region. Besides the economic benefits described in the first category, one of the important economic aspects of investments is the multiplier effect of spending money. To describe some of these effects the U.S. Department of Commerce's Regional Industrial Multiplier System was queried to obtain several multipliers for typical activities. The economic activity generated by spending funds to construct a power plant or wastewater treatment facility, for example, is over three and one-half, while a new reservoir is over three. These multipliers include such effects as the purchase of manufactured goods, services, etc.

Using the multipliers, the projected $180 billion or so in power plant investments can be shown to have an effect on the region of $700 billion in economic activity between 1975 and 2000. The effect of the $1 billion for recommended watershed projects, dams, and local flood control projects is $3 billion; the effect of approximately $3.2 billion for water quality control is $11.8 billion in economic activity.

SOCIAL

The effects of the ORBC recommended plan on the region's social well being must be discussed in very general terms. Social impacts can be more accurately determined as part of the site-specific analysis made for each item adopted into the regional plan, and are considered by the Commission at an appropriate level of detail for each candidate for adoption into the regional plan. Senate Document 97 included social well-being as the overall objective for planning of water and related land resources with economic development and environmental quality as subcomponents, whereas the current Water Resources Council Principles and Standards require assessment of social well-being as one of the four accounts displayed under the two national objectives of economic development and environmental quality. However, as a regional entity, the Commission's primary objective is to improve the social well-being of the people in the basin. This means solving the problems in the region and meeting the needs of the region's people as they see those needs and problems. The importance of the two national objectives is not lessened by this approach. As outlined in the first two parts of this section, the Commission's plan is always evaluated as to how well it meets those objectives; but problems are not ignored and discarded just because the solutions do not provide greater national economic development or result in a purer environment than before.

Implementation of the recommendations included in the regional plan will create many temporary jobs and a number of permanent jobs. More accurate delineation of the employment aspects of an individual project or program is done during the detailed planning of each project and program. These employment estimates do not reflect the new permanent and temporary jobs that would be created by the construction of additional energy facilities in the valley. Other studies have indicated that, during construction of a power plant, some 500 temporary employees could be needed; while during operation, a power plant will likely require about 100 employees.

Historically there has been a long-term gradual increase in productivity as well as per capita consumption of electrical energy. In order to improve the productivity of individuals and the standard of living of the residents of the valley, the generation of electrical energy will probably have to increase; conservation through more efficient use of energy will help reduce the rate of increase. Unless there are major technological improvements, however, it is unlikely that conservation alone will be sufficient to make available the added energy necessary to meet needs. If only half of these projected energy needs are met, it is likely that productivity will decrease and net real income to the residents of the valley will be reduced. The question which has not been answered is whether the resultant loss in productivity and real income will have a significant multiplying effect. If it does, it could lead to insufficient supplies of goods and services which, in turn, could lead to loss of capital, lagging private investment, and inadequate local services. Failure to meet the projected energy demands means that the less affluent, who do not now have adequate residential heating and cooling, cannot hope to enjoy that improvement in their quality of life because the energy will not be available. This would not be true if alternative ways of distributing energy other than the ability to pay are employed.

Beneficial effects on life, health, and safety are derived from 148 recommended flood damage abatement projects. These projects together with local commitments to nonstructural actions will further reduce the effects of flooding in the study area. The water quality control program should improve the quality of the streams in the study area and, therefore, the quality of the water supply used by the citizens. Most of the major health-related problems of the past related to water supply are under control by the proper operation of existing treatment plants; but the newly discovered health-related problems are associated with the complex industrial waste which flows in the streams in small concentrations and with generally unknown health effects. The problems are addressed by study recommendations to further quantify them and define their health aspects. While water quantity problems of energy development are minor, it is acknowledged that the air quality problems are likely to be significant.

The recommended plan has 107 recreation projects. These would provide more than 18 million additional recreation visitor days. The nine scenic rivers, 102 natural areas, and 69 fish and wildlife areas will protect the current natural resource at these locations and make this resource available to the public for leisure and psychic renewal. A number of these natural areas will be provided for scientific study and analysis. Little recreational opportunity loss will occur as a result of the recommended plan.

The transportation recommendations provide for maintaining and protecting the viability of the navigation system which supports the national emergency preparedness. The recommendation to provide ample electric power and ample supplies of gas and liquid through the conversion of coal also supports emergency preparedness.

The individual projects and programs recommended for implementation will require the relocation of a number of homes, businesses, and farms. The actual number of these losses is determined at the detailed planning stage. Associated with relocation is some loss of income from that land and loss of tax base. On the whole, as anticipated, the loss of tax base will be offset by the increase in property value associated with the projects. Generally, the natural areas, fish and wildlife areas, and scenic rivers have been left in their natural state because of their low value for other economic uses. Consequently, the tax loss and economic opportunity foregone by these areas is anticipated to be minimal.

Using the Senate Document 97 approach to social well-being, the social well-being of the people of the study area can be described as met if the various functional water resources needs are met. Correspondingly, if these needs are not met, the social well-being is degraded proportionately.

The existing and underway projects and programs satisfy 50 percent of the existing demand for boating.

Based on the amount of sewage treated, 85 percent of the need for adequate (1977 goals) municipal water quality control has been accomplished or is under construction. The plan recommends 100 percent satisfaction; however, only 50 percent of municipal facilities have adequate treatment or such facilities under construction.

The transportation recommendation provides that all but Locks and Dams 52 and 53 will be adequate at 2000. Future damageable growth in the flood plain is recommended to be prohibited by zoning, while 65 percent of the existing damages are abated by existing or underway projects; the recommended plan would raise this abatement to 72 percent.

APPENDICES

COMPARISON OF POPULATION PROJECTIONS

The four population projections presented here represent conditional forecasts of the future. They do not represent goals, nor express what is desirable or undesirable. Each is based on a different set of assumptions. The Ohio River Basin Comprehensive Survey (Framework) and the OBERS C projections are essentially the same, based on the concept that the growth trends of the 1950's and 60's will continue, yielding a population of 37 million in the year 2020 — nearly double the 1970 population. OBERS E projections, however, are based on the assumption that the growth rate will decline and eventually result in a stable population.

During the development of each subregional CCJP, the state population projections were used instead of OBERS E, in accordance with ORBC policy. Examination of the OBERS E and the total of the various state portions of each subarea indicates that the two projections are essentially the same at the regional level although there are some localized differences.

Figure 25 displays four projections: state, OBERS E, OBERS C, and Framework. The OBERS C and the Framework projections are approximately 15 percent greater than the state total for the year 2000. If the higher projections were used, the associated needs and problems described in this plan for the year 2000 would occur earlier in time. If the basin grows at a rate slower than the state and the OBERS E projections, these needs and problems will occur slightly later in time. However, with the exception of municipal wastewater treatment facilities, which are sized to meet the 1990 OBERS E projections, the specific potential projects and programs recommended by the Commission are not sensitive to the projections used. This is because the needs and problems projected for the year 2000 are not completely met by the Commission's recommendations. Most of the specific projects and programs are recommended to address existing problems even though they are designed with the future in mind.

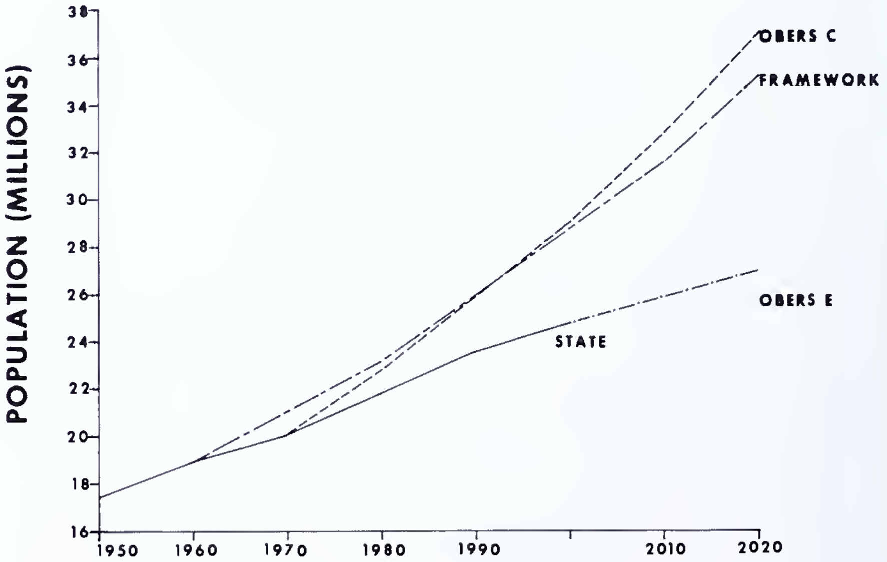


FIGURE 25.

OHIO RIVER BASIN POPULATION
EXISTING & PROJECTED

GOALS OF THE OHIO RIVER BASIN COMMISSION

The overall goal of the Commission's plan is to enhance the environmental, economic and social conditions of the basin.

In each of the subregional CCJP's, this overall goal has been subdivided into specific goals for each functional use of water and related land resources. These functional goals are taken directly from state and federal laws and policy statements which relate primarily to protecting the environment and fulfilling the needs of the people. There are no apparent conflicts among these various goals and policies, whether state-to-state, federal-to-state, or function-to-function. Conflicts arise only when two or more mutually exclusive uses of the same site-specific resource are proposed.

The Commission's goal in resolving conflicts between economic development and environmental values is to recommend developmental projects with net economic benefits and acceptable environmental effects, and environmental projects which have net environmental benefits and acceptable economic effects. The well-being of all the people shall be the overriding determinant in considering the best use of water and related land resources. Hardship and basic needs of particular groups within the general public shall be of concern, but care shall be taken to avoid resource use and development for the benefit of a few or the disadvantage of many.

THE COMMISSION'S PLAN RELATIVE TO PRESIDENTIAL POLICY INITIATIVES

The current Administration has made two major efforts to revise federal water policies. The first was a series of Executive Orders contained in the President's Environmental Message of May 1977, and the second consisted of the President's Water Policy Message of June 1978, which included 19 initiatives. While many of the details and directives of these two efforts are to be carried out by specific federal agencies in the implementation phase of water resources planning and development, a number of them do apply to the Commission's activities.

All Commission-developed Level B studies and CCJP documents have integrated the study report and the environmental impact statement into one document, beginning with the Monongahela Level B Study (1975). The integration is designed to make the EIS process more useful and to reduce paper work, consistent with the intent of Executive Order 11991, May 24, 1977.

Executive Order 11990, May 1977, emphasizes the protection of wetlands. The protection of wetlands has been a concern of the Commission since it was formed. The preservation of a significant wetland was a major issue in the Monongahela Study. During the Ohio Main Stem Study, an analysis was made of the wetlands along the Ohio River. This analysis demonstrates that there is no need for conflict between development and preservation in the flood plain. The Commission's plan includes recommendations for the preservation of wetlands.

Executive Order 11988 concerns flood plain management. Beginning with the Monongahela Study, the Commission recommended the zoning of all flood plains as called for in the Executive Order. Additionally, the Commission conducted extensive work on flood plain management which included the development of a nonstructural analysis process and provision for interstate flood plain management coordination. These efforts are described in the Policy Issues Section of this document, under Flood Plain Management (page 16).

The Presidential policy initiatives of June 1978 are grouped into four categories or areas of concern. The first category relates to improving federal water resources programs; the majority of these initiatives deals with revising and improving the Principles and Standards of the Water Resources Council. Existing Commission policy and practice are already consistent with several of the suggested revisions. The initiatives state that, "Projects should have net national economic benefits unless there are environmental benefits which clearly more than compensate for any economic deficit. Net adverse environmental consequences should be significantly outweighed by economic benefits.'' This approach toward deciding tradeoffs between economic and environmental projects and effects was used in the Commission's initial study, the Monongahela, and in every study since. The Presidential initiatives also include directives for developing a nonstructural flood control alternative whenever a structural flood control alternative is developed, and for equalizing the cost sharing for structural and nonstructural flood control alternatives at 80 percent federal/20 percent non-federal. The Policy Issues Section (Flood Plain Management) of this plan recognizes the need to study both types of alternatives at the same time and that both should be funded at the same level, with the recommendation that guidelines for nonstructural alternatives be developed.

The second category concerns water conservation. In analyzing water supply needs, the Commission examines all alternatives, including more efficient use and reducing demand, as well as developing additional supplies. The Commission's recommendation that new power plants on the Ohio River not be automatically required to construct cooling towers could save up to one-fourth of the basin's projected increase in consumptive water use between now and the year 2000.

The Ohio Basin has abundant surface water resources, however, arbitrary measures to reduce the amount of water withdrawn for public water systems can have adverse effects. (For example, if a town's water supply comes from an upstream reservoir, the application of conservation practices to reduce water use can have the effect of increasing effluent concentrations from the town's wastewater treatment facility. The reduced flow from the town's wastewater treatment facility may cause a lower drought flow in the receiving stream, with significant adverse water quality and fisheries impacts. This is particularly true for those situations in which a large portion of the receiving stream's dry-season flow comes from the wastewater treatment facility.)

The third category or concern deals with federal/state cooperation. The main purpose of the Commission is to enhance and improve federal/state coordination and cooperation. With regard to specific Presidential recommendations to increase the amount of funding for Title III of the Water Resources Planning Act, the Commission recommended, in October 1972, that funding for Title III be substantially increased. The ORBC continues to support the need for increased Title III funding.

The fourth concern relates to environmental protection. In these initiatives, the President recommends accelerated land treatment measures in PL-566 projects. The current ORBC regional plan recommends accelerated land treatment measures throughout the basin. The President also directs the federal agencies to provide "leadership in maintaining instream flows" including the "joint assessment of needs". Actions taken by the Commission relative to instream flows include: funding special instream flow studies in West Virginia and Illinois; recommending funds be provided the U.S. Fish and Wildlife Service to conduct an instream flow analysis of the entire Ohio Basin as part of the Water Resources Assessment of Emerging Coal Technologies (Section 13(a) of PL 93-577); and requesting funds to conduct an environmental needs study which will include, among other things, the assessment of needs for instream flows. This study has not yet been included in the President's budget.

HOW ALTERNATIVE PROJECTS AND PROGRAMS ARE CONSIDERED IN THE ORBC PLANNING PROCESS

There are three basic types of alternative projects:

1. Alternative uses of the same resource:

Two or more potential projects are alternatives to each other if they are mutually exclusive and use the same resource. (For example: A potential reservoir and a potential wild and scenic river are alternative uses of the same miles of stream. When one is chosen, the other is excluded).

2. Alternative solutions to the same need or problem:

Two or more potential projects are alternatives if they solve the same problem or meet the same need. (For example: Modification of stream channel versus floodwalls versus relocation of buildings outside the flood plain. Each is an alternative solution to the other two and if one is chosen, the other two are probably excluded. In some instances, combinations of alternative solutions may be a preferred total project rather than choosing just one particular method.)

3. Alternative designs:

Different designs of the same project are alternative methods of meeting the same need while using the same specific project type. (For example: Developing different combinations of reservoirs and channel modifications and levees within a watershed project are alternative designs. The basic differences between designs are in economic and environmental impacts. Each design should meet the same general level of need and consist of the same project type and funding program.)

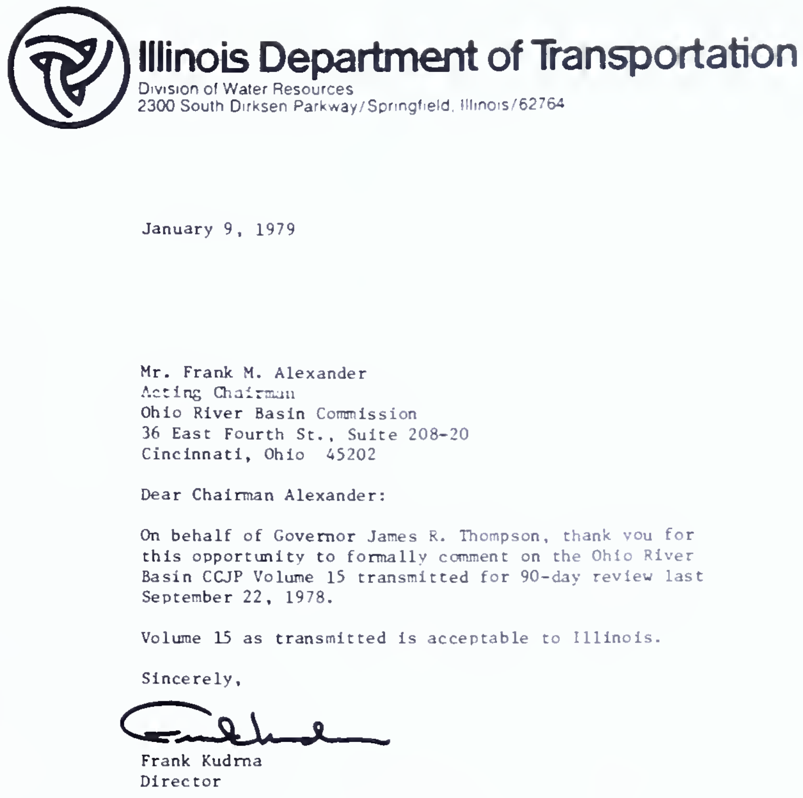
The ORBC planning process concentrates on the first two types of alternative projects — alternative uses of the same resource and alternative solutions to the same need or problem. Alternative designs are left to the individual state or agency responsible for carrying a recommended project through to implementation. Alternative projects considered by the Commission vary in the amount of detailed information available for each project. Because of this variation and level of detail, each potential project may have a different level of planning completed at the time of Commission consideration. In some instances, a cursory field investigation has been conducted and conceptual projects formulated. In other cases, extensive detailed studies and, in some instances, designs have been completed. Regardless of the amount of detailed work completed to date, each potential project is considered for inclusion in the regional plan based on the anticipated use of resources and the ability to solve a particular need or problem. Inclusion in the regional plan is by project name and type, with an identified principal planning agency (the agency responsible for implementation). Because of the varying amount of data available, a project recommendation may be based on a conceptual design only or on a completed detailed study. In every instance, all state or agency procedures must be completed for any recommended federal or federally-assisted project, including the requirements of the National Environmental Policy Act of 1969 and the Principles and Standards of the Water Resources Council.

If detailed studies have been completed for a potential project, inclusion in the Commission's plan constitutes agreement as to the specific design alternative chosen. On the other hand, if only a preliminary field investigation has been conducted for a potential project, inclusion in the plan does not constitute the selection of a particular design. It is presumed that a design which is the most economically efficient and environmentally acceptable will result from the detailed planning. If during a detailed study it becomes clear that an acceptable design is not being developed, the recommendation for that particular project can be withdrawn. This process allows the Commission to recommend what is needed based on the information available and to adjust its plan as new information becomes available.

REVIEW COMMENTS

Review comments from the following are included in this document:

State of Illinois
State of Indiana
Commonwealth of Kentucky (and ORBC response)
State of Maryland
State of New York
State of North Carolina
State of Ohio
Commonwealth of Pennsylvania (and ORBC response)
State of Tennessee
Commonwealth of Virginia
State of West Virginia
U.S. Dept. of Agriculture (and ORBC response)
U.S. Dept. of the Army (and ORBC response)
U.S. Dept. of Commerce (and ORBC response)
U.S. Dept. of Energy (and ORBC response)
U.S. Environmental Protection Agency (and ORBC response)
U.S. Dept. of Health, Education and Welfare
U.S. Dept. of Housing and Urban Development
U.S. Dept. of the Interior (and ORBC response)
U.S. Dept. of Transportation
Ohio River Valley Water Sanitation Commission
Citizens' Advisory Council to the Ohio River Basin Commission (appears in the front of this report)



Illinois Department of Transportation
Division of Water Resources
2300 South Dirksen Parkway/Springfield, Illinois/62764

January 9, 1979

Mr. Frank M. Alexander
Acting Chairman
Ohio River Basin Commission
36 East Fourth St., Suite 208-20
Cincinnati, Ohio 45202

Dear Chairman Alexander:

On behalf of Governor James R. Thompson, thank you for this opportunity to formally comment on the Ohio River Basin CCJP Volume 15 transmitted for 90-day review last September 22, 1978.

Volume 15 as transmitted is acceptable to Illinois.

Sincerely,

Frank Kudrna
Director

STATE of INDIANA
INDIANAPOLIS, 46204
DEPARTMENT OF NATURAL RESOURCES
JOSEPH D. CLOUD
DIRECTOR

October 20, 1978

Mr. Fred E. Morr
Chairman
Ohio River Basin Commission
Suite 208-20, 36 E. 4th Street
Cincinnati, Ohio 45202

Dear Mr. Chairman:

As the Governor's representative to the Ohio River Basin Commission, I am providing this letter in response to your September 22, 1978 request for our review of the document; "The Ohio River Basin, The Regional Water and Land Resources Plan."

The Department of Natural Resources has previously recommended some amendments in connection with a few items concerning Indians. Therefore, with those amendments, I am pleased to express Indiana's approval of this summary and analysis document for the Ohio River Basin Commission's recommended plan for the entire Ohio River Basin.

Sincerely,

Joseph D. Cloud
Director
Department of Natural Resources

JDC/KWW:mm

"EQUAL OPPORTUNITY EMPLOYER"

OFFICE OF THE GOVERNOR
FRANKFORT, KENTUCKY 40601

JULIAN M. CARROLL
GOVERNOR

October 19, 1978

Mr. Fred E. Morr, Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

RE: Draft E.I.S. - The Ohio River, the Regional Water and Land Resources Plan

Dear Mr. Morr:

The Commonwealth of Kentucky has received the report and draft Environmental Impact Statement entitled "The Ohio River Basin, The Regional Water and Land Resources Plan."

Review of this document is being handled through the Commonwealth's E.I.S. Clearinghouse and under the coordination of the Kentucky Department for Natural Resources and Environmental Protection. In accordance with your schedule, comments and recommendations will be forwarded to you before the December 22, 1978, end of comment date.

We appreciate the opportunity to review and comment on this plan.

Sincerely,

Jack B. Hall
Jack B. Hall
Chief Executive Officer

Eugene F. Mooney
Secretary

Julian M. Carroll
Governor

Commonwealth of Kentucky
Department for Natural Resources and Environmental Protection
Office of the Secretary
Frankfort, Kentucky 40601
Telephone (502) 564-3350

December 18, 1978

Mr. B. H. McConnell
Vice Chairman
Ohio River Basin Commission
36 East Fourth Street, Suite 208
Cincinnati, Ohio 45202

Dear Mr. McConnell:

The Kentucky Department for Natural Resources and Environmental Protection is pleased to have had the opportunity to review the commission's document dated July 1978 and entitled "The Ohio River Basin - The Regional Water and Land Resources Plan." This report serves as a plan report and also constitutes an Environmental Impact Statement as required by Section 102(2)(c) of NEPA.

The commission members and staff are to be commended for having prepared a highly readable and easily understood document. The commission should also be complimented for recognizing and making an attempt to incorporate into the report non-conventional types of water resource concerns, for instance, environmental resources values, instream flow requirements, and the relationship between proper land use and overall water resource management.

The department has four general comments on the draft regional plan and impact statement. First, the department is concerned that the impacts summary provided in the draft plan is not sufficiently comprehensive, and it is DNREP's opinion that an affirmative effort should be made to expand and improve the adequacy of this section prior to referral of the final plan and impact statement to the entire commission. There is a definite need to more accurately identify and describe, both quantitatively and qualitatively, the probable cumulative environmental, social, and economic impacts that will result from implementing the overall plan, as opposed to deferring any assessment until some future time and then relying solely on the information, conclusions, and recommendations that may be presented in individual project-specific impact statements. At a very minimum, the impact section should include an expanded analysis of those groups of interrelated or individual plan elements where major issues or trade-offs are likely to be significant to the decision-making process.

Second, because recognized national policy directives represent either planning objectives or constraints, it would be desirable to include such deliberate policies as specific basin objectives in the regional plan. Examples of national policies which should be considered in some detail include agricultural land preservation, wetlands protection, flood plain management, various aspects of the national water policy reform initiative, energy and general resource conservation programs, regional growth management and economic development strategies, and comprehensive facility siting considerations. At a minimum, the relationships of proposed plan elements to each of the above national policy directives should be discussed.

Third, the report could be made more useful by adding summary comparative data and projections for such national trends as population, employment, and earnings; energy generation; annual average flood losses; water quality improvement; and recreation, forest, and agricultural resources. The inclusion of this type of information would permit regional and national comparisons to be made for each functional consideration and would assist much needed inter-basin coordination. It would also serve to promote a better understanding of the national importance of the entire Ohio River Basin, as well as an appreciation for the basin's individual problems within a broader national setting. Where comparative relationships for acid mine drainage and coal resources were presented in the plan, they proved quite valuable in providing an expanded basin perspective.

Fourth, the usefulness of the document could be substantially improved by formally including a list of general and water resource-specific regional planning goals in the final plan. Specification and discussion of basinwide desires and objectives would provide all interested decision-makers with a means of assessing whether or not the programs and projects proposed in the plan sufficiently address the basin's problems, needs, and opportunities, and further, whether the proposed elements are those best suited to alleviating identified discrepancies between the basin's existing water and land resources situation and the regionally developed and endorsed goals.

Again, thank you for the opportunity to make these comments. The department looks forward to receiving a copy of the commission's final plan and impact statement.

Sincerely,

Eugene F. Mooney

Eugene F. Mooney
Secretary

cc: Julian Carroll, Governor
C. Frank Harscher, III, Deputy Secretary
Bernard Carter, Commissioner

orbc

OHIO RIVER BASIN COMMISSION

Suite 208-20
Cincinnati, Ohio 45202

36 East Fourth Street
513/684-3831 (FTS)

February 8, 1979

Mr. Eugene F. Mooney
Secretary
Dept. for Natural Resources
& Environmental Protection
Capital Plaza Tower
Frankfort, KY 40601

Dear Mr. Mooney:

We have received your December 18, 1978 comments on the Commission document, "The Ohio River Basin - The Regional Water and Land Resources Plan and Draft Environmental, Economic and Social Impact Statements". Revisions have been made to the document to reflect the concerns expressed in your letter.

We appreciate your interest in the Commission's work.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander

Frank M. Alexander
Vice-Chairman

EUGENE F. MOONEY
SECRETARY

JULIAN M. CARROLL
GOVERNOR

COMMONWEALTH OF KENTUCKY
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
OFFICE OF THE SECRETARY
FRANKFORT, KENTUCKY 40601
TELEPHONE (502) 564-3350

December 21, 1978

Mr. B. H. McConnell
Vice Chairman
Ohio River Basin Commission
36 East Fourth Street
Suite 208-20
Cincinnati, Ohio 45202

RE: Comments on the Ohio River Basin Recommend Plan E.I.S.

Dear Mr. McConnell:

The Ohio River Basin Recommended Plan Environmental Impact Statement has been circulated to the Kentucky Environmental Review Agencies for their comments. Enclosed are the comments that were returned by the State Archaeologist and the Department of Agriculture on the statement. Also enclosed are the comments that Secretary Eugene F. Mooney has already forwarded to the Commission on the Plan.

Any late arriving comments will be forwarded to your attention.

Sincerely,

Boyce R Wells

Boyce R. Wells
Environmental Review Coordinator

BRW:ksm

Enclosure

UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY 40506

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF ANTHROPOLOGY

18 Oct. 1978

Environmental Review
Office of Planning and Research
Department for Natural Resources
and Environmental Protection
4th Floor Capital Plaza Tower
Frankfort KY 40601

Re: DEIS, The Ohio River Basin, The Regional Water and Land Resources Plan, The Ohio River Commission.

Dear Sirs:

I appreciate very much the opportunity to comment on the referenced draft Environmental Impact Statement outlining in general terms the policies and goals of the Ohio River Commission. As I am specifically concerned with the archaeological resources of the Commonwealth of Kentucky, my comments generally relate to them and how they are presented in this statement.

The position of the Commission relative to archaeological resources is summarized on page 59, in numbered category 8 wherein it is pointed out that implementation of the proposed policies will result in the loss of "some archaeological, geological, and historic sites". I consider this an egregious and misleading understatement. As I understand it from my local perspective the potential loss of archaeological sites is great indeed. This loss can not be mitigated through preservation of natural areas, proposed on page 58 in numbered category 6, if these areas are to be considered areas which have low economic potential. The areas of high archaeological potential, unfortunately, coincide as a general rule with those areas of currently assessed high economic potential, for example along the flood plains of the major rivers covered in this study.

It is hoped that in the final statement the Commission will restate this portion of the expected impacts of their proposed policy and indicate their support of the relevant Federal legislation which is specifically designed to treat the impacts of proposed projects upon this aspect of our cultural resources.

Sincerely Yours,

R Berle Clay

R. Berle Clay
Office of State Archaeology

AN EQUAL OPPORTUNITY UNIVERSITY

Comments Regarding

"The Regional Water and Land Resources Plan of the Ohio River Basin Commission"

Draft Environmental and Social Impact Statements
Dated July, 1978

Submitted By

THE KENTUCKY DEPARTMENT OF AGRICULTURE

1. Although the title indicates that the report is a regional water and land resources plan, this agency has interpreted the plan, to be in effect, an appraisal of the water and land resources in relation to meeting long range, regional energy needs.
2. It is believed the report could be enhanced if the proposal benefits were identifiable by project and state; i.e. what does the plan actually do for, or to, Kentucky?
3. Some information about agriculture, for example, the graph on page 5 and the statement on page 51, should be modified to reflect more accurately both the concerns and goals of agriculture.
4. There are several statements within the booklet which need revision. For example, on page 2, a statement reads as follows: "The Interior Low Plateau in the southwestern third of the basin is dominated by limestone rock which covers most of this region." Also, a statement on page 21 seems to conflict; "The Ohio River Basin has abundant but limited water supply."
5. There are numerous questions about the report which may or may not be answered during the revision process. However, the Kentucky Department of Agriculture, by participating in the evaluation of this draft, neither approves or disapproves of the report or any project therein.

BLAIR LEE III
ACTING GOVERNOR

STATE OF MARYLAND
EXECUTIVE DEPARTMENT
ANNAPOLIS, MARYLAND 21404

October 20, 1978

Mr. Fred Morr, Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Morr:

I am happy to acknowledge receipt of your letter and summary report entitled, "The Ohio River Basin, The Regional Water and Land Resources Plan."

The report is currently being reviewed by Henry Silbermann, an Assistant Secretary of the Department of Natural Resources and an Alternate Commissioner of the ORBC. You will be hearing from Mr. Silbermann by December 22, 1978, with our comments on the report.

Sincerely,

Blair Lee

Blair Lee III
Acting Governor

JAMES B. COULTER
SECRETARY

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
TAWES STATE OFFICE BUILDING
ANNAPOLIS 21401
301/269-3548

LOUIS N. PHIPPS, JR.
DEPUTY SECRETARY

January 3, 1979

Mr. Frank Alexander
Vice Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Alexander:

The State of Maryland has completed its review of the ORBC summary report entitled, "The Ohio River Basin, The Regional Water and Land Resources Plan," dated July 1978, and finds that this document essentially meets its intended objective, to serve as a summary and assessment of the Comprehensive Coordinated Joint Plan developed by ORBC for the Ohio River Basin.

We commend the staff of ORBC for the heroic effort involved in reducing the 14 volumes of CCJP to the 66 pages of this summary document.

We are separately supplying you with a number of suggestions which, we believe, will add precision in language, and make the entire document more readily understandable. These suggestions are intended for consideration by the staff in a further review of the July, 1978 report, and in the preparation of the final document.

Sincerely yours,

Henry Silbermann

Henry Silbermann
Assistant Secretary

HS:fcg
Enc.

cc: Dr. Albert R. Miller, Jr.

STATE OF NEW YORK
EXECUTIVE CHAMBER
ALBANY 12224

HUGH L. CAREY
GOVERNOR

October 24, 1978

Dear Mr. Morr:

Thank you for the opportunity to review the Ohio River Basin Commission's recommended plan and draft environmental impact statement as described in the Commission's report entitled, "The Ohio River Basin - The Regional Water and Land Resources Plan."

Although the New York State portion of the Ohio River Basin is not large, the issues addressed in the plan generally reflect the concerns of the residents of New York State. Worthy of special attention is the process being used to identify problems, needs and policy issues and to implement programs to resolve these matters.

We are particularly interested in the conservation of our resources and the implementation of measures to achieve this purpose consistent with economic and environmental objectives. Accordingly, we believe that the Commission should actively pursue these objectives in specific recommendations and in its more detailed planning efforts.

Sincerely,

Hugh L. Carey

Honorable Fred E. Morr
Chairman
Ohio River Basin Commission
36 East Fourth Street, Suite 208-20
Cincinnati, Ohio 45202

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27611

JAMES B HUNT, JR
GOVERNOR

October 4, 1978

Dear Mr. Morr:

Thank you for your letter of September 22 enclosing the Regional Land and Water Resources plans for the Ohio River Basin.

Our Department of Natural Resources & Community Development, Division of Environmental Management, will review the comprehensive coordinated joint plan and submit North Carolina's comments and recommendations to the Commission by December 22, 1978.

My warmest personal regards.

Sincerely,

Mr. Fred E. Morr, Chairman
Ohio River Basin Commission
Suite 208-20, 36 E. Fourth St.
Cincinnati, Ohio 45202

cc: Secretary Howard Lee, Attn: Mr. A. F. McRorie

North Carolina Department of Natural Resources & Community Development
James B. Hunt, Jr., Governor Howard N. Lee, Secretary

DIVISION OF ENVIRONMENTAL MANAGEMENT

November 14, 1978

Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Sir:

The State of North Carolina has reviewed the draft environmental, economic and social impact statements prepared for the annual revision of the Comprehensive Coordinated Joint Plan (CCJP) for the Ohio River Basin Plan.

The document is a satisfactory presentation of the assets, needs and problems of the basin in the area of water resource development.

Although this volume does not go into detail on the portion of the Kanawha Sub-basin which is located in North Carolina, it appears to be generally consistent with our State's development plans.

We concur in your recommendation that new thermal power plants should not automatically be required to utilize cooling towers. Our staff holds the view that the method of cooling must be determined on a case-by-case basis.

Inasmuch as North Carolina has only a small share of the entire basin, we have no comment on those parts of the plan which deal with other states and on those problems which do not affect us.

Sincerely yours,

A. F. McRorie
Director

cc: Gov. James B. Hunt, Jr.
Sec. Howard N Lee

bm

P. O. Box 27687 Raleigh, North Carolina 27611
An Equal Opportunity Affirmative Action Employer

STATE OF OHIO
OFFICE OF THE GOVERNOR
COLUMBUS 43215

JAMES A RHODES
GOVERNOR

September 28, 1978

Mr. Fred E. Morr, Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Fred:

I am very appreciative of receiving a copy of "The Ohio River Basin, The Regional Water and Land Resources Plan."

Thank you for your courtesy in providing me with this informative report.

Sincerely,

JAMES A. RHODES
Governor

ODNR
Ohio Department of Natural Resources
Fountain Square • Columbus, Ohio 43224 • (614) 466-3770

October 20, 1978

Mr. Fred E. Morr
Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, OH 45202

Dear Mr. ~~Morr:~~ Fred

Governor Rhodes has forwarded a copy of your report entitled "The Ohio River Basin, The Regional Water and Land Resources Plan" to the Department of Natural Resources for review. Our staff has reviewed the report and concluded that we have no additional comments to add to Governor Rhodes' letter.

Thank you for the opportunity to review this document.

Sincerely,
Bob
ROBERT W. TEATER
Director

RWT:ck

JAMES A. RHODES, *Governor* • ROBERT W. TEATER, *Director*

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
P. O. BOX 1467
HARRISBURG, PENNSYLVANIA 17120
The Secretary

In reply refer to
RM-R
W 80:3 JP

December 19, 1978

Frank Alexander, Acting Chairman
Ohio River Basin Commission
36 East Fourth Street, Suite 208
Cincinnati, Ohio 45202

Dear Mr. Alexander:

This is in response to former Chairman Fred E. Morr's September 22, 1978, request to Governor Shapp for views, comments, and recommendations on the overall summary and analysis document of the Commission's Comprehensive Coordinated Joint Plan (CCJP), otherwise known as Volume 15: The Ohio River Basin, The Regional Water and Land Resources Plan. Mr. Morr's request initiated the formal 90-day review of the document as stipulated by the Water Resources Planning Act (P.L. 89-80). Governor Shapp asked me to respond to the request for him.

The document is an excellent integrating synopsis of the policy issues, recommendations, and the overall economic, environmental and social effects of the Commission's CCJP. From Pennsylvania's viewpoint, we find the document is compatible to the Commonwealth's policies and our State Water Plan findings. From a more general viewpoint, the document is a good comprehensive report of the Ohio Basin's water and related resources useful for both the layman and the professional engineer.

The following specific suggestions are offered for the enhancement of textual implication and accuracy:

- On p. 10, Mine Drainage, an additional quantitative measure of aciditic streams is desirable to relate the scope of the problem within the basin. A perchange of acidic flows in the basin is suggested. We also suggest additional information that tells why mine drainage is a problem, such as loss of water for domestic and industrial uses, degradation of recreational facilities, lethal effects on aquatic life, and accelerated deterioration of bridges and power plant facilities. Finally, some clarification should be made regarding the 1977 Surface Mining Control and Reclamation Act to avoid the misconception that the program is a panacea for the problem. Actually, mine drainage abatement is the third priority of project types considered under the program.

- On p. 20, the last sentence of the second paragraph needs revision. Here the text refers to the Commission's recommendation on cooling towers at new power plants as a means of reducing consumptive uses. Since cooling towers are well known for their consumptive uses, the reference is misleading without the recommendation. Hence, it is suggested that the reference be revised to "...the Commission's recommendation, that new power plants on the Ohio River not be automatically required to construct cooling towers, could save up to one-fourth of the basin's projected increase in consumptive water use...". As we noted in our comments on the Main Stem Study, Pennsylvania's endorsement of such recommendation is conditional to maintaining the rise in ambient water temperature to 5°F. or less.

- On p. 22, the awareness of the continuity of the surface - groundwater system must be extended to the perception of pollution problems, particularly those caused by mine drainage. An example of this need is the occurence of groundwater pollution due to surface mining, and the subsequent degradation of surface streams by polluted groundwater discharges. Thus, the pollution of groundwater reserves as a result of coal mining may become a serious threat to the Basin's water supply sources. This should be evaluated.

- The draft EIS assumes that present regulatory and enforcement programs are adequate to assure that present and future coal mining operations will not create serious environmental problem (p. 10, paragraph 3). However, most State regulatory programs have been in effect for only a short time, or are being developed to satisfy P.L. 95-87 requirements. Hence, an evaluation on how successful these programs are at preventing mine-related pollution is desirable. This should be done as soon as possible in view of the anticipated acceleration of coal production in the near future as noted on p. 52 of the document.

The opportunity to review the document is appreciated.

Sincerely yours,

Maurice K. Goddard

MAURICE K. GODDARD

---

orbc

OHIO RIVER BASIN COMMISSION

Suite 208-20 36 East Fourth Street
Cincinnati, Ohio 45202 513/684-3831 (FTS)

February 8, 1979

Mr. C. H. McConnell
Acting Secretary
Dept. of Environmental Resources
PO Box 1467
Harrisburg, PA 17120

Dear Mr. McConnell:

We have received your December 19, 1978 comments on the Commission document, "The Ohio River Basin - The Regional Water and Land Resources Plan and Draft Environmental, Economic and Social Impact Statements". Revisions have been made to the document to reflect the concerns expressed in your letter.

We appreciate your interest in the Commission's work.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander

Frank M. Alexander
Vice-Chairman

TENNESSEE DEPARTMENT OF CONSERVATION
2611 WEST END AVENUE
NASHVILLE
37203

RAY BLANTON
Governor

B. R. ALLISON
Commissioner

October 16, 1978

Mr. Fred E. Morr, Chairman
Ohio River Basin Commission
36 East Fourth Street
Suite 208-20
Cincinnati, Ohio 45202

Dear Mr. Morr:

On behalf of Governor Ray Blanton, I am responding to your letter of September 22, 1978, addressed to the Governor, in regard to the document providing an overall summary and analysis of the Comprehensive Coordinated Joint Plans for the 14 subregions of the Ohio River Region. Thank you for sending copies of this document and for providing the opportunity for review and comment.

The staff of the Division of Water Resources has reviewed the document and discussed minor changes and additions with the Commission staff. I have no further comment to make except to express my hope that this CCJP Summary will be informative to the citizens of the Ohio River Basin as well as decision makers.

YOURS FOR A BETTER TOMORROW,

B. R. Allison

BRA:mp

COMMONWEALTH *of* VIRGINIA
STATE WATER CONTROL BOARD
2111 Hamilton Street

R V Davis
Executive Secretary

Post Office Box 11143
Richmond, Virginia 23230
(804) 257 0056

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OCT 11 1978

Mr. Fred E. Morr, Chairman
Ohio River Basin Commission
Suite 203-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Morr:

Governor Oalton has asked that I respond to your letter of September 22, 1978, with which you provided for review and comment a copy of the overall summary and analysis document titled "The Ohio River Basin, A Regional Water and Land Resources Plan".

The referenced document has been reviewed and found to be a discussion in verv general terms of the effects of the recommended plan on the region. Impacts of each specific recommendation contained in the plan must, of course, be accurately determined as part of a site-specific analysis made for each component of the regional plan, which analyses we understand will be contained in a detailed environmental impact statement prepared by the appropriate agency prior to implementation of a particular component of the plan.

Thank you for the opportunity to review the referenced document and to comment thereon.

Sincerely yours,

R. V. Davis
Acting Executive Secretary

hw

STATE OF WEST VIRGINIA
OFFICE OF THE GOVERNOR
CHARLESTON 25305

JOHN D ROCKEFELLER IV
GOVERNOR

December 15, 1978

Dear Mr. Alexander:

This letter is to acknowledge receipt of the Ohio River Basin Commission's publication, "The Ohio River Basin, the Regional Water and Land Resources Plan" and the Environmental Impact Statement (EIS) for the recommended Plan.

Personnel of the Water Resources Division of the Department of Natural Resources have been involved in the development of the plan and have completed review of the Plan and the Environmental Impact Statement. We have no suggested changes or substantive comments or recommendations to make at this time. We agree that the planned projects will contribute to the economic, environmental and social needs of the region.

The opportunity to review this document is appreciated.

Sincerely,

John D. Rockefeller IV

John D. Rockefeller IV

Mr. Frank Alexander, Acting Chairman
Ohio River Basin Commission
36 East Fourth Street
Cincinnati, Ohio 45202

cc: David C. Callaghan, Director, Department of Natural Resources
David Robinson, Chief, Water Resources Division, Department of Natural Resources

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DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON D C 20250

JAN 23 1979

Mr. Frank M. Alexander
Vice Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Alexander:

This responds to Mr. Fred E. Morr's letter of September 22, 1978, requesting views, comments, and recommendations on the Commission's summary and analysis document "The Ohio River Basin, The Regional Water and Land Resources Plan." The document is proposed as a combined river basin report and draft environmental impact statement (EIS).

The document provides a concise and readable summary of the plan for the Basin's subregions. We agree with your view that the document can serve as the draft EIS.

Agriculture uses are made of 49 percent of the land area. However, there is no discussion of how much of the agricultural land is prime agricultural land and how prime agricultural land will be impacted. For example, how will future coal strip mining, and transportation associated with the mining, impact the prime agricultural land?

Sincerely,

M Rupert Cutler

M. RUPERT CUTLER
Assistant Secretary for
Conservation, Research, & Education

orbc

OHIO RIVER BASIN COMMISSION
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202
513/684-3831 (FTS)

February 8, 1979

Honorable M. Rupert Cutler
Assistant Secretary for Conservation,
Research and Education
Department of Agriculture
Office of the Secretary
Washington, DC 20250

Dear Mr. Cutler:

We have received your January 23, 1979 comments on the Commission document, "The Ohio River Basin - The Regional Water and Land Resources Plan and Draft Environmental, Economic and Social Impact Statements". Revisions have been made to the document to reflect the concerns expressed in your letter.

We appreciate your interest in the Commission's work.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander
Frank M. Alexander
Vice-Chairman

DEPARTMENT OF THE ARMY
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D.C. 20310

9 NOV 1978

Mr. Fred Morr
Chairman, Ohio River Basin Commission
36 East Fourth Street, Suite 208-20
Cincinnati, Ohio 45202

Dear Mr. Morr:

I am replying to your letter of 22 September to Secretary Alexander requesting the views of the Department of the Army on the Ohio River Basin Commission's overall summary and analysis document - "The Ohio River Basin, the Regional Water and Land Resources Plan."

We found review of this document in any substantive way to be complicated by the absence of a comparative analysis of the policy issues (needs) and the projects and programs recommended by the Commission. A summary comparison of the region's needs over time and the recommended projects and programs in the Comprehensive Coordinated Joint Plan would be very helpful in assessing the adequacy or shortfalls of the Plan.

Your summary report including the draft environmental impact statement helps to bring many important aspects of existing water and related development programs into focus. It clearly demonstrates that the basic thrust of governmental actions is directed toward environmental enhancement. A full 80 percent of the total capital cost of implementing the $9.2 billion plan represents the cost of municipal wastewater treatment facilities, acid mine drainage abatement, land treatment, and other environmental measures.

This report satisfactorily covers the projects and programs of the U.S. Army Corps of Engineers and it will be an aid in our future planning for their implementation.

I have inclosed, on a separate sheet, a few supplementary observations for your consideration.

Sincerely,

Michael Blumenfeld
Deputy Under Secretary

1 Inclosure
As stated

DEPARTMENT OF THE ARMY
Supplementary Observations
on
The Regional Water and Land Resources Plan (ORBC Report/Draft EIS)

Table 4, Projects and Program Summary, on page 55 is of particular interest. It lists the number of potential projects recommended by the Commission, followed by the number of existing or underway projects of the same general classification. The absence of water supply from this list of project categories is noted. We recognize the major reservoirs may contain water supply storage and, therefore, to some extent this need may be addressed. However, there are many existing single-purpose water supply lakes throughout the basin. It would be helpful to know if they were excluded from the summary because the water supply problem is considered insignificant or because the individual projects have no regional importance.

All the recommended projects and programs except for those concerning electric power appear to be the efforts of some governmental agency. As ORBC is the principal agency for the coordination of governmental and nongovernmental plans for development of water and related resources in the basin, it would be appropriate to discuss the nongovernmental plans or acknowledge that at this time there are none except for the plans of private utilities.

The water quality discussion on page 32 notes an analysis of water quality vis-a-vis the 793 recommended municipal wastewater treatment facilities has not been made. It is not clear if this discussion is directed toward the construction or the operation of these facilities or why a recommendation for or against making the analysis has not been included.

OHIO RIVER BASIN COMMISSION
Suite 208-20 36 East Fourth Street
Cincinnati, Ohio 45202 513/684-3831 (FTS)

February 8, 1979

Honorable Michael Blumenfeld
Deputy Under Secretary
Department of the Army
Office of the Under Secretary
Washington, DC 20310

Dear Mr. Blumenfeld:

We appreciate your November 9, 1978, views and comments on "The Ohio River Basin: The Regional Water and Land Resources Plan, July 1978."

With regard to your comments, we offer the following:

1. A comparative analysis for the needs for flood damage abatement, transportation, water quality control and the recommended projects and programs is presented on Pages 62 and 63.

The existing needs for surface water recreation cannot be met by the recommended plan. The projected needs are described in the report, but since the recommended projects and programs do not even meet the existing needs, a discussion of how well projected needs are met is not included.

The analysis of needs relative to energy has been limited to the adequacy of the water supply and the effects of energy development on other aspects of water resources. Both of these are described at length in the report. No attempt was made to identify potential thermal power projects to meet the projected demands at the turn of the century. The siting and identification of such facilities is left to the private utilities, however, such facilities are considered by the Commission as they are identified by the private utility planning process.

2. In response to your comments on single purpose lakes throughout the basin, the number of non-federal major reservoirs is being added to Table 4.

3. Currently, the only non-governmental projects in the Commission's plan are power plants. However, the extent to which non-governmental facilities meet needs and create demands are considered throughout the basin.

4. The water quality discussion on Page 32 is directed toward the need for constructing municipal wastewater treatment facilities. Currently, the recommendation that such facilities be built is based on complying

with the Clean Water Act, and not on the improvement in instream quality which will result from such construction. The Commission has not yet determined whether or not such an analysis should or should not be made.

We are pleased that you note the "report satisfactorily covers the projects and programs of the U.S. Army Corps of Engineers and it will be an aid in (your) future planning for their implementation."

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander

Frank M. Alexander
Vice-Chairman

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Policy
Washington, D.C. 20230

OCT 4 1978

Honorable Fred E. Morr
Chairman
Ohio River Basin Commission
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Morr:

Secretary Kreps has asked me to acknowledge the receipt of the overall summary and analysis document entitled "The Ohio River Basin, The Regional Water and Land Resources Plan." I note that the draft environmental impact statement has been combined with the summary and analysis document.

I will send you the Department of Commerce comments on this plan within your requested review period. Dr. Sidney Galler, Deputy Assistant Secretary for Environmental Affairs, will send you the Departmental comments on the draft environmental impact statement.

Thank you for the opportunity you have given us to review this plan.

Sincerely,

James W. Curlin

James W. Curlin
Deputy Assistant Secretary
for Policy

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Policy
Washington, D.C. 20230

NOV 2 1978

Chairman
Ohio River Basin Commission
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Sir:

The Department of Commerce has completed its review of the overall summary and analysis document entitled "The Ohio River Basin, The Regional Water and Land Resource Plan."

The only comments received are those from the Secretary's office. These remarks are enclosed for your consideration. I have also enclosed a copy of this Department's energy forecast, at the State level. This latter document is the basis for some of our comments.

Thank you for the opportunity afforded us to make this review.

Sincerely,

James W. Curlin
Deputy Assistant Secretary
for Policy

Enclosures

DEPARTMENT OF COMMERCE COMMENTS ON OHIO RIVER BASIN COMMISSION'S -- " THE OHIO RIVER BASIN, THE REGIONAL WATER AND LAND RESOURCES PLAN"

Office of Secretary/Ocean, Resource and Scientific Policy Coordination

The energy approach -- which focuses primarily on coal -- is generally reasonable up to the year 2000, suggesting that the region's coal production will be over 900 million tons by that year. However, they cite the Ohio River Basin Comprehensive Survey's prediction of 2.8 billion tons by 2020 as compared with 450 million tons mined per year at present. The report would be better without the extreme uncertainly posed by that 2.8 billion ton forecast.

There are three details which would also improve the report:

1. Figure 14, page 35 -- the hydroelectric sites should be checked to make certain they do not represent coal fired pumped storage sites. This is a confusion raised by the Army Corps of Engineers which shows up again on page 37 where 4,300 additional electrical megawatts (MWE) are predicated on pumped storage . Technically, pumped storage is usually coal or oil fired; it is incorrect to credit the resultant electricity to hydropower.

2. Page 39 -- The report forecasts a use of 50 to 100 million tons of coal for synthetic fuels in 12 operational and 7 pilot plants by the year 2000. This is an extraordinarily optimistic forecast; three plants in the next twenty-two years is more reasonable.

3. Page 39 versus page 52 -- on page 39, the report states (speaking approximately) that "For comparison, 4 million tons of coal are currently mined in the basin." On page 52, more precisely, the report speaks of "450 million tons of coal being mined each year..." It would help the report to use the "450" number throughout.

Any water requirement based on the coal projection for the year 2020 or based on the synthetic fuel projection for the year 2000 would be overstated.

Office of Secretary/Office of Regional Economic Coordination

The comments contained herein do not go beyond general observations.

The Ohio Basin document conveys the general impression that all or nearly all major policy issues and problems have been surfaced. The policy issues concern mine drainage, non-point source pollution, environmental needs, natural and recreation areas, flood plain management, instream flows, energy and dam safety (pages 10-19). Summary discussion is also devoted to current and future problem areas, such as water supply, flood damage abatement, water transportation, water quality, energy, recreation, natural environment and land resources -- all important to the future well-being of the Ohio Basin (pages 20-54).

The distilled version of the 14 volume plan considers the positive and negative impacts of a proposed $9.2 billion water resource investment price tag for the Ohio Basin. At times it provides an almost deceptive clarity, replete with color photos, summary tables, pie diagrams and easy to understand graphical presentations.

For the unsophisticated reader (not a specialist in the complex field of water usage, conservation and preservation), it may be a satisfying experience to peruse this document. For the more sophisticated specialist, however, aware of the underlying complexities comprising the water resource problems of the central and eastern United States, a degree of uneasiness is bound to arise. For example -- only the specialist can discern or guess at the elements that might have been left out, or the gaps that could exist in this highly abreviated summary plan.

Thus the policy maker dependent on this document, is left with little choice between being in favor of the views espoused or against them, leaving him in an uncomfortable "either/or" situation, with only generalized rationale to support the plan's recommendations. Fortunately, this need not be so.

The forecasting element -- essential in any long-range planning document -- could be greatly strengthened if alternative futures or options were clearly presented. This could be achieved by the addition of several more alternative demographic and related statistical tables, accompanied by appropriate discussion pertaining to the assumptions upon which these alternative futures are based.

Since it is almost axiomatic that a single quantitative projection of the future (whether demographic or economic) seldom

turns out to be "correct" -- the value of the Ohio Basin plan would be significantly enhanced if the present single "best guess" for future population levels and economic growth for its sub-regions were strengthened with a set of at least three alternative projections. These alternative projections should be based on plausible but differing key assumptions. The result would be a more rational, flexible, and credible overall planning document, and much more useful to all parties involved in the future development process of the Ohio Basin. In any event, utilizing the above methodology would soften the "rigidity" and simplistic character that the document now conveys, by admitting possible deviation from a single and probably inaccurate forecast. Particularly, for the sub-regions, unforeseen changes in economic development can greatly alter future needs and subsequent investment patterns. Throughout our national development, population projections and derived growth data based on single projections have been less than immutable. On the contrary, glaring deviations have occurred from the expected, resulting largely from erroneous basic assumptions. This hold true for nearly all types of projections, be they demographic, economic, short, intermediate and long range.

In summary, the present document exhibits a fundamental weakness and should be corrected by the incorporation of additional projections, such as for example: "low," "medium" and "high" population projections for each of the 14 sub-regions (and reflected in the summary distillation). These projections or assumptions should be accompanied by reasonable analytical comment in order to convey maximum understanding and clarity for the reader. The end result would yield a more sophisticated and credible document, of higher utility to the policy maker than the present draft.

Apart from the aforementioned serious methodological weakness of the Ohio Basin plan, mention is made of a "minor" point worthy of additional analysis: On page 60, it would be useful if the multiplier rationale could be buttressed by additional analysis in order to convey needed credibility.

OHIO RIVER BASIN COMMISSION
Suite 208-20
Cincinnati, Ohio 45202
36 East Fourth Street
513/684-3831 (FTS)

February 8, 1979

Honorable Juanita Kreps
Secretary of Commerce
Commerce Bldg.
14th St. & Constitution, NW
Washington, DC 20230

Dear Secretary Kreps:

Thank you for the November 21, 1978 Department of Commerce's review and comments on "The Ohio River Basin, the Regional Water and Land Resources Plan, July 1978".

The purpose of the Commission is to provide decision makers with the regional expression of its needs and problems and recommended solutions as the region understands them. This in essence constitutes one alternative: the preferred regional alternative. The clarity of the report is essential in order for the regional preference to be understood.

To address some of your concerns, a section comparing alternative projections and the sensitivity of the plan to these projections has been added.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander
Frank M. Alexander
Vice-Chairman

Department of Energy
Washington, D.C. 20545

DEC 15 1978

Mr. Fred E. Morr, Chairman
Ohio River Basin Commission
36 E. Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Morr:

In response to your letter of September 22, 1978, to Secretary Schlesinger, we are forwarding the enclosed comments on "The Ohio River Basin, The Regional Water and Land Resources Plan," for your consideration.

We appreciate the opportunity for reviewing the report. Please feel free to call John Mathur (FTS 233-5898) if you have any questions on the comments.

Sincerely,

Ruth C. Clusen
Assistant Secretary for Environment

Enclosure:
As stated

Enclosure
Dec. 7, 1978

COMMENTS ON "THE OHIO RIVER BASIN, THE REGIONAL WATER AND LAND RESOURCES PLAN"

1. There is a slight inconsistency in statements about basin bituminous coal reserves. Page 5 says 70 percent of national total but pages 18 and 52 say more than 60 percent.

2. Page 5 - last paragraph on right - Does the socio-economic term "Appalachia" correspond exactly to the physiographic province of the "Appalachian Plateau" described on Page 2 and delineated in Figure 1 of Page 3? Clarification would be helpful.

3. Page 14 - last two sentences - The discussion here should explain how the inland needs of an area such as the ORB relate to offshore oil leases. What are the eligibility requirements for an area to receive the described funding?

4. Page 17 says the U. S. Fish and Wildlife Service is undertaking in-stream flow studies as part of an energy study. We would appreciate receiving information on plans for such a study and whether this is being done as part of the studies conducted by WRC for DOE. If so, what is the status in relation to Section 13 studies.

5. In general, the discussions of energy (p. 18 and pp. 34-37) do not cover the potential contributions of renewable resources (such as solar) or energy conservation in modifying water demands.

6. Page 18 states that it has not yet been determined whether ample water exists in tributaries for energy development. Since p. 34 indicates that 50 percent of electric generation in the region is expected to continue being located on tributaries, this potential constraint on energy development would appear to require careful consideration in the sub-basin studies. Similar consideration should be given to the presumed primary deployment on the main stem of synfuels plants (figure 16); particularly since Fig. 25 indicates major coal provinces may be sometimes at least as convenient to tributaries as to the main stem. Tradeoffs of cost of coal transport vs. availability of water (p. 39) might cause some synfuel plants to be on tributaries.

7. Page 21 - Table 2 - Some errors in addition were found as indicated in Attachment 1, enclosed.

8. Page 22 says that the Monongahela Basin has insufficient water supply in drought periods. However, Table 2 indicates that total consumption in this basin in 2000 is only about 30 percent of the 7Q10 flow. On the other hand, the Big Sandy-Guyandotte does appear to have projected consumption greater than 7Q10.

9. Page 22 states that ground water is the source of the natural low flow. Is this totally correct? In general, since flows are highly regulated, it may be unnecessary and misleading to refer to natural low flow at all. In addition, from Fig. 6, it is not clear that the quoted statement would apply to all tributaries.

10. Page 28 indicates a 2.4 fold increase in water freight by 2000, with the majority being fossil fuel. However, p. 52 indicates basin coal use might rise from 140 MMT (1975) to 296-396 MMT (2000). The extreme value would represent somewhat more than the 2.4 increase noted just for internal basin use. In addition, the earlier Ohio Framework study appears to project the possibility of even higher total coal production in the basin; would this tend to produce a greater load on the water transport system and hence on the conclusion (p. 28) that most of the lock systems will be adequate through 2000.

11. Page 30 - Table 3 - Tennessee River is included in the navigation system for the ORB. Yet, the opening paragraph of the report on page 2 excludes the former. Perhaps some notation could be added to the table to remove this seeming inconsistency.

12. Page 34 - last two lines on left - The discussion here may be misinterpreted to mean an increase in water supply. Suggest change to read as follows: "....the Transportation Section. Consumptive water use is expected to increase over four times. This increase is greater than that in...."

13. Page 37 - lines 9 and 10 on left - Our records indicate that the "4,300 MW" mentioned for potential pumped-storage development appears to be unrealistically, low, when considering the topographic and hydrologic features of the ORB.

14. Page 37 indicates a potential for an additional 4000 MW of hydropower in the basin plus 4300 MW of pumped storage, and that almost all the main stem high-rise dams now appear attractive for hydropower. What portion of the former value would represent installing generators in existing dams vs. new dams? In addition, does this projection include power from low head dams or dams on tributaries. Since the Department of Energy is very interested in encouraging the development of low head hydro (and hydropower in general), it would be helpful if the report could provide further discussion. It is our understanding that the Corps of Engineers is conducting continuing surveys of hydropotential in the basin; perhaps additional cooperative studies with DOE and FERC could be developed.

15. Page 37 mentions only two types of problems associated with hydropower (land use for new reservoirs and water quality). Perhaps other factors need to be discussed, such as potential peaking effects on water transport, fishkill through turbines, obstruction of migrating species. See Attachment 2.

16. Page 39 compares potential water consumption of synfuels to the much larger total use; perhaps a fairer comparison would be to the net available flow (7Q10 or other) after other uses, particularly if plants should ever be located on tributaries.

17. Pages 42 and 43 - Recreation - Are projections for recreation supply and demand available for the year 2000? All other projections in the report go to the year 2000.

18. Page 52 - last paragraph on right - This discussion points out that fossil electric generation in the ORB is projected to increase about 1.8 times between 1975 and 2000. On page 34, under Thermal Electric Energy, the amount of electric energy capacity is stated as increasing "3.3" times for the same period. It would be helpful to expand the discussion on either, or both pages in order to relate the projected fossil generation to the increase in electric capacity.

19. Page 52 states that over 1.2 million acres of land have been disturbed by surface mining of coal. This statement should be expanded to include the land-acreages which will be involved due to the projected surface and deep mining of coal. Also, there should be a statement on reclamation of land which will be disturbed by the coal mining activities.

20. Page 53 - Coal Production - Clarification required on the following:

> Sentence transportation problems relative to coal
> (lines 9-11) is adequately substantiated-

The discussion concerning coal supply projections (sentences 2 and 4) does not sufficiently differentiate between national and ORB quantities and Administration and framework goals.

21 The Impacts section, pages 56 to 64, needs to include items such as: economic impacts of disturbing land for coal mining and energy development, especially if the land was used for agricultural or recreational activities; health effects of mining and operation of energy facilities, etc.

22. Page 66 indicates that Department of Energy data was used for energy projections. Although the data used in the study generally reflects data developed by FPC and ERDA prior to their incorporation into DOE, the particular values of older projections may not exactly match new projections by DOE. Consequently some qualifying statement would be desirable here, plus an indication that all projection values should only be taken as representing a range of possible future events.

23. Mine drainage control program is of interest to the Department of Energy, especially due to the proposed increases in coal utilization. We suggest that the section on Policy Issues - Mine Drainage (Page 10) be expanded to include general findings of the Monongahela Study, the issues needing further study and future programs of the Ohio River Basin Commission in this regard.

Attachment:
As stated

OHIO RIVER BASIN COMMISSION

Suite 208-20
Cincinnati, Ohio 45202
36 East Fourth Street
513/684-3831 (FTS)

February 8, 1979

Honorable James Schlesinger
Secretary of Energy
US Dept. of Energy
Washington, DC 20545

Dear Secretary Schlesinger:

Thank you for the December 15, 1978 Department of Energy's review and comments on "The Ohio River Basin, the Regional Water and Land Resources Plan, July 1978."

Some of your suggestions will be used to make editorial corrections. As you know, the regional plan consists of the volume in question plus 14 subregional volumes. The plan currently totals about 4,000 pages. A number of Commission supporting documents and more importantly, vast amounts of Commission member reports are also available in support of the plan. The detail requested in your other comments is included in all these documents.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander

Frank M. Alexander
Vice-Chairman

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30308

December 22, 1978

Ref: 4W-IL

Mr. Frank Alexander, Acting Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Alexander:

On behalf of Administrator Douglas M. Costle and the Environmental Protection Agency, I am pleased to respond to your request of September 22, 1978, for agency review of the Ohio River Basin Report/Draft Environmental Impact Statement dated July, 1978.

As the designated lead region for agency review as required by Section 102(2)(c) of the National Environmental Policy Act, we are assigning the Draft Environmental Impact Statement a rating of LO-2, i.e., we have no immediate objections to processing of the report as prescribed by PL 89-80, however, the Level C studies should contain more detailed environmental and programmatic information.

We appreciate the opportunities which our agency representatives have had to contribute to development of this report during the planning process. On the basis of our staff review, the following additional suggestions are submitted.

(1) Although we continue to support our previous sanction of consensus approval of the review draft report, we feel that our appended review comments should reflect our agency view that closed-cycle cooling should continue to be employed, as a general policy on the Ohio River.

(2) The reference to water quality management studies on page 11 should be revised to include both statewide and areawide planning activities.

(3) Statements indicating that more detailed Environmental Impact Statements (EIS) will be prepared for each project and program should be revised to indicate that all projects will have a more detailed environmental assessment. An EIS may not be necessary for all projects.

(4) The implication that non-point source pollution problems were not found to be significant is not entirely consistent with the recommended land treatment measures. The interrelationship of land treatment measures to both productivity and environmental quality should be further emphasized.

We appreciate the opportunity to review this report and look forward to continued participation in the comprehensive coordinated joint planning procedure.

Sincerely,

John A. Little, Deputy

John C. White
Regional Administrator

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orbc

OHIO RIVER BASIN COMMISSION
Suite 208-20
Cincinnati, Ohio 45202
36 East Fourth Street
513/684-3831 (FTS)

February 8, 1979

Mr. John C. White
Regional Administrator
Region IV
Environmental Protection Agency
345 Courtland St., NE
Atlanta, GA 30308

Dear Mr. White:

We have received your December 22, 1978 comments on the Commission document, "The Ohio River Basin - The Regional Water and Land Resources Plan and Draft Environmental, Economic and Social Impact Statements". Revisions have been made to the document to reflect the concerns expressed in your letter.

We appreciate your interest in the Commission's work.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander

Frank M. Alexander
Vice-Chairman

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGION V
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

OFFICE OF THE
PRINCIPAL REGIONAL OFFICIAL

JAN 2 2 1979

Mr. Frank M. Alexander
Vice Chairman
Ohio River Basin Commision
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Alexander:

Thank you for providing us the opportunity to review the Regional Water and Land Resources Plan and the draft environmental statement for the Ohio River Basin.

As we have stated before, our direct involvement with the activities of the Commission tends to be somewhat limited. We are, however, interested in the overall goals. The statement on the effects of the ORBC plan on the region's social well being is clearly and concisely written. We particularly support the concept of meeting the needs of the people as they see them. The Citizens Advisory Council and the Citizens Task Force concept is evidence of your commitment to public participation.

We have no specific or technical comments to offer on the Plan.

Thank you again for making the Plan available to us.

Sincerely,

Robert A. Ford
Robert Ford
State Liaison Officer

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGIONAL OFFICE
300 SOUTH WACKER DRIVE, CHICAGO, ILLINOIS 60606

REGION V

DEC 1 4 1978

IN REPLY REFER TO
5C

Frank Alexander, Acting Chairman
Ohio River Basin Commission
Suite 208-20, 36 E. 4th Street
Cincinnati, Ohio 45202

Dear Mr. Alexander:

This is in response to your letter dated September 22, 1978 wherein you provided for our review the document entitled "The Ohio River Basin, The Regional Water and Land Resources Plan" which is intended to serve as a summary of the Commission's Comprehensive Coordinated Joint Plan for the Ohio River Basin.

We have reviewed the work and believe it adequately sets forth the water and related land resources needs and the Commission's recommendations for resolving conflicts in their use in a summary manner. It is understood that a separate Environmental Impact Statement will be prepared by the Federal Agencies when necessary to analyze specific projects in detail.

Sincerely,

Ron Gatton
Regional Administrator

AREA OFFICES
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United States Department of the Interior
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

PEP ER 78/1039

JAN 12 1979

Mr. Frank Alexander
Acting Chairman
Ohio River Basin Commission
Suite 208-20
36 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Alexander:

Thank you for the letter of September 22, 1978, requesting our views and comments on the Regional Water and Land Resources Plan and draft environmental statement for the Ohio River Basin. In conducting our review, we have noted some omissions and deficiencies which should be corrected in the final document. Where applicable our comments have been organized into general and specific concerns.

General Comments

94 We cannot concur with the conclusion reached by the Ohio River Basin Commission that if the Commission's plan is implemented, "the overall environment of the basin will be enhanced." The statement does not help to identify, resolve, or avoid potential conflicts between development, recreation, and fish and wildlife resources.

Under the Ohio River Basin Commission Planning Process, we find that all reasonable alternatives were not considered for certain proposed multipurpose projects. In the Ohio Main Stem Level B Study, for instance, some of the projects were developed by the sponsoring agency a number of years before it was required that nonstructural measures be considered equally with structural measures. At no point during the course of the Ohio Main Stem Level B Study did the Plans Formulation Committee give consideration to alternative ways to solve such problems. Nonstructural measures were considered only in those areas where structural measures could not be justified. The Committee either accepted or rejected the proposed plans prepared by the sponsoring agency. Thus, the Level B basin plan consists solely of a list of proposed resource projects that have not been completely integrated into a basin plan through comprehensive planning.

The plans formulation process as used in the Level B study left much to be desired. Basically it consisted of the consideration of each proposed project by the sponsoring agency and the State in which the project was located. As many as 300 or more proposed projects were considered by the committee during three short two-day meetings. Very little, if any, data on costs, benefits, recreational visitation, and other factors were available for many projects, especially for proposed multipurpose projects. Many members of the plans formulation committee had little or no knowledge about many proposed projects, yet they were asked to make judgments regarding each proposed project. As a result most decisions were made by concurrence between the sponsoring agency, the State, and the Commission staff.

During the above process a judgment was made as to whether a given proposed project would contribute to the National Economic Development (NED) or the Environmental Quality (EQ) objective. For many projects these decisions were made without benefit of any cost or benefit data. Where it could not be determined whether a particular project would contribute either to the NED or EQ objective, the project was omitted from both alternative plans even though it may have been included later in the recommended plan. The sum of all projects judged to contribute to the NED objective constitutes the NED plan, likewise for the EQ plan. Even though the Principles and Standards (P&S) require the development, as a minimum, of NED and EQ plans, no attempt was made during the superficial planning process to develop either a well-rounded NED or EQ plan that would optimize input to the respective objectives. Neither alternative plan was completely evaluated for its capability to satisfy stated needs. Consequently, neither the NED or EQ plan are complete, well-rounded plans that might be used to establish benchmarks for development of other alternative plans. Neither plan was examined for its potential to meet the four tests, although one or more of the tests of acceptability, effectiveness, and efficiency were given consideration on a project-by-project basis. The test of completeness was not applied to either of these alternative plans.

We recognize that Level B planning is supposed to be based primarily on existing information. Additional data, however, should be developed where existing information is inadequate to accomplish an effective planning process. The Water Resources

Council Proposed Guidelines state on page 20 that "The Principles and Standards will be applied to the degree necessary to develop and evaluate alternatives." Provisions are made for variance in the detail of application. These guidelines, however, do state "...this variability should not be used to circumvent the intent of the Principles and Standards."

The Guidelines go on to state that:

> The Principles and Standards require the development of alternative plans to meet the problems, needs, and opportunities of the two national planning objectives, National Economic Development (NED) and Environmental Quality (EQ) in the planning area. The Level B planning process can be consistent with the Principles and Standards by considering alternative solutions at varying intensity of analysis, particularly in the initial planning process. Then as a part of the iterative process, succeeding levels of detail may be developed for various alternative plans as needed.

A Level B study requires the development of sufficient information, where it is not already available, to permit a reasonable completion of the study under the guidance of the Principles and Standards.

Many proposed actions have not been evaluated sufficiently to permit a reasonable assessment of the proposed action under the four-account system of P&S. Thus, the account system is very incomplete and provides little or no substantive data to the prospective user. We want to state unequivocally that we strongly oppose the publication of such incomplete data. In fact, such data are easily misinterpreted and could be misleading to the user.

Even though the Heritage Conservation and Recreation Service is charged with the responsibility to coordinate recreational planning on proposed multipurpose Federal projects and comprehensive planning efforts, no opportunity was given to evaluate the recreational potential of projects proposed by the Corps of Engineers and the Soil Conservation Service.

One of the major shortcomings of the Ohio Main Stem Level B study was that recreational input was not coordinated by anyone. The River Basin Commission staff determined early in the study that the Corps of Engineers, the U.S. Department of Agriculture, and the State inputs would be made separately from that made by the Heritage Conservation and Recreation Service. Many of these projects were not evaluated for their capability to satisfy recreational needs, either by the sponsoring agency or by the River Basin Commission staff. As a result the total output for recreation in the recommended plan is totally unknown except for reasonable estimates for boating and fishing.

The proposed basin plan does not adequately address rivers which have been identified as potential components of the National Wild and Scenic Rivers System by the Heritage Conservation and Recreation Service's Wild and Scenic River System Study. The System Study, which began in 1975, has identified rivers which meet the minimum criteria of Public Law 90-542, for further study and/or potential inclusion into the National Wild and Scenic Rivers System.

We have enclosed a copy of the Second Preliminary Draft List of Rivers under Evaluation which was issued in September 1978. This list, which is now being finalized, is largely identical to that which will serve as our final recommendations. A similar list has been developed in our Lake Central Regional Office and our Southeast Regional Office.

Specific Comments

Pages 3, 18, and 52. The statement adequately discusses coal resources and production and is consistent with information furnished to the Ohio River Basin Commission by the Bureau of Mines. However, other mineral resources are not covered and should be discussed when site specific environmental statements are developed on the 1,233 recommended projects in the 14 subregions' portions of the basin.

Page 13, Item 1, and page 45. We firmly believe that the phrase "specific environmental needs" is too definitive and needs to be modified. Even though efforts have been made to quantify needs for certain types of environmental resources, we are not aware of any success along these lines. Who can say what the need is for natural areas, scenic rivers, or wetlands?

In spite of the extensive research accomplished toward the quantification of needs for general recreational activities, the state of the art is not that accurate, even though we are dealing with activities in which historic trends can be measured fairly well through research. However, any future projection of use must be premised on certain assumptions which may or may not be accurate.

As a result, projects based on what appears to be reasonably hard data are likely to be, at best, only moderately accurate. To attempt to develop "specific environmental needs" from data of a highly subjective nature for certain types of environmental resources is next to impossible. Therefore, these statements should be modified and generalized to a very substantial degree.

If recent historic events offer any reliable estimates of future trends, the need for natural areas, wild and scenic rivers, wetlands, and other resources will increase phenomenally. Recent trend changes indicate a very rapid increase for opportunities for river rafting and canoeing, natural and scenic areas, and other similar natural settings. It is anticipated that these changing trends will continue for an indefinite period of time. The quantity of resources that can qualify as wild and scenic rivers--either at the State or Federal level--natural areas, wetlands, etc., is very limited and is declining rapidly. Therefore, every mile of stream and every acre of land or wetland that qualify for such designation under either State or Federal criteria should be preserved in perpetuity.

Page 14. We disagree with the recommendation of the States that cost sharing under the Land and Water Conservation Fund program should be changed from 50/50 to 75 Federal/25 non-Federal.

Page 40. Discussion on activity needs in the Ohio Main Stem Level B Study was limited to only boating and fishing. These are only two of a number of outdoor recreational activities. Data were provided to the Commission staff early in the study for a number of other water-based and water-oriented activities. We urged that this discussion be expanded to include the status of needs for other activities as well as boating and fishing. As a minimum, the discussion should have covered swimming, camping, picnicking, biking, and nature study.

It was stated, on page III-41 of the Ohio Main Stem Level B Study, that a large portion of the needs for camping, picnicking, and swimming will go unmet. We do not agree with that conclusion, since there was no complete analysis of the total recreational needs that would be satisfied by the recommended plan and recommended studies. Many of the projects proposed by the Corps of Engineers, Soil Conservation Service, and the States were not evaluated for their capacity to satisfy recreational needs for each of the activities. A true assessment cannot be made until all projects have been properly evaluated. One of the basic

shortcomings of this study is the deficiency of analysis of alternative plans as required by the Principles and Standards.

In addition to acid drainage problems (page 52), abandoned mines contribute to problems of land subsidence resulting from mine-roof collapse. Subsidence not only becomes a geologic hazard, but also results in water-related problems. Such problems have occurred in areas where the propagation of mine subsidence fissures traverses overlying water-bearing materials and induces subsurface drainage of water from existing wells. Locally these fissures may permit the migration of poor-quality water and the diversion of surface water to abandoned mines--increasing the mine-flooding hazard. Subsidence problems should be addressed in the environmental statement.

Page 56. Under Requirement 1, it is stated that the plan emphasizes environmental quality improvement and, as a result, contributes to only minor adverse impacts. This is not consistent with Requirement 5, Item 2, which states that impoundments would result in the loss of many miles of free-flowing rivers and streams and wildlife species dependent upon this habitat.

Page 56, Impacts. This section is a general summary of impact analysis of the 14 river basins in the Ohio Basin. In the Ohio Main Stem Level B Study, it should have been clearly stated in the section on Environmental Impact Highlights . . . . "that the beneficial and adverse impacts have been only partially evaluated and that many numbers have little or no true meaningl For example, the "13+ million users of intensive recreation facilities" did not include that visitation which would accrue to most Corps of Engineers and Soil Conservation Service projects. Also, many projects submitted directly by the States were not evaluated for their capacity to satisfy recreation needs. Therefore, this figure is of little value unless it is specifically qualified as to what is and is not included. These comments apply to a number of data listed under these impacts.

In the section on Principles and Standards accounts of that study, we took strenuous objection to the presentation of only a partially completed analysis under the P&S accounting system. Either the accounting should be completed to permit the presentation of a reasonably accurate analysis under each of the four accounts or no data should be presented at all. The presentation of data for only slightly more than one-half of the projects provides no useful information either to the decisionmakers, or the public. Incomplete data can only be misleading and confusing.

To further complicate the analysis, total benefits for all plans were presented for a different number of projects than were presented for average annual costs. Thus, benefits were shown for projects for which no costs were computed.

Page 57, Requirement 2. We suggest the following replacement wording for the last paragraph, first column, last five lines: "unavoidable effects associated with implementation of the plan include biological degradation and inundation of free flowing stream reaches and loss of significant acreages of forest, crop land, pasture land, and rural residential land at impoundment sites."

Page 58, Requirement 5, Items 4 and 6. Preservation of natural areas, fish and wildlife areas or scenic rivers does not constitute an irreversible and irretrievable commitment of resource as the terms are used in the Principles and Standards. The resources remain available for alternative uses should conditions change in the future.

In the Ohio Main Stem Level B Study, the recommended plan which was only partially evaluated was compared against a NED and an EQ plan, both of which were deplorably incomplete. We firmly believe that no effective or meaningful comparison can be made when only portions of all three plans were evaluated. The provision of such misleading data casts doubt regarding the merit of such planning efforts.

Page 59, No. 8. The statement that "Some archeological, geological, and historical sites may be lost." is not an adequate analysis of the cultural resources in a study of this type. The statement should be expanded to require sponsoring agencies of proposed structural projects to contact and work with the State Historic Preservation Officers and local historical societies to find ways to preserve and protect such cultural resources, especially those that are either listed or proposed for listing on the National Historical Register.

Destruction of such resources should be permitted only in the absence of any viable alternative. In any case the sponsoring agency of any proposed structural project should be required to initiate contact with the appropriate State people during the study and design phase of any project prior to its authorization and funding for construction. Consideration of cultural resources at this stage of planning may result in the modification of project plans to permit the preservation of the resource.

In summary, many of the comments made in this review are premised on the detailed comments made during the review of the Ohio River Main Stem Level B Study. It is believed that, since the planning on that portion of the total basin was much more intensively conducted than the planning on a number of the tributary basins in Ohio and eastern Indiana, the above comments are at least as appropriate to those tributary basins as to the main stem study area.

We hope these comments will be of assistance to you.

Sincerely,

Larry E. Meierotto
Deputy Assistant SECRETARY

Enclosure

orbc

OHIO RIVER BASIN COMMISSION
Suite 208-20
Cincinnati, Ohio 45202
36 East Fourth Street
513/684-3831 (FTS)

February 8, 1979

Honorable Cecil D. Andrus
Secretary
Department of the Interior
Office of the Secretary
Wahington, DC 20240

Dear Secretary Andrus:

Thank you for the January 12, 1979, Department of the Interior's review and comments on "The Ohio River Basin, the Regional and Water Resources Plan."

This report is a summary of the Commission's plan as it is today. Some of your suggestions will be used to make changes in the report. However, your other comments, which cannot be adequately addressed through a brief modification of the summary report, will be addressed in future revisions of the Commission's entire plan subject to available funds and time.

FOR THE OHIO RIVER BASIN COMMISSION:

Frank M. Alexander
Frank M. Alexander
Vice-Chairman

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS
U.S. COAST GUARD (G-WEP-7/73)
WASHINGTON, D.C. 20590
PHONE: 202-426-3300

16476/7.b 506

10 OCT 1978

Ohio River Basin Commission
36 East Fourth Street, Suite 208
Cincinnati, Ohio 45202

Gentlemen:

On behalf of the Department of Transportation the concerned staff of the U. S. Coast Guard has reviewed the draft environmental impact statement for The Ohio River Basin-The Regional Water and Land Resources Plan. We have neither comments nor objections to offer at this time.

The opportunity to review the environmental impact statement is greatly appreciated.

Sincerely,

J. [illegible]
[illegible] Coast Guard
[illegible]ntal
By direction of the Commandant

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OHIO RIVER VALLEY
WATER SANITATION COMMISSION
414 WALNUT STREET, CINCINNATI, OHIO 45202 (513) 421-1151

WARREN L BRAUN
CHAIRMAN
LEO WEAVER
EXECUTIVE DIRECTOR
AND CHIEF ENGINEER

December 27, 1978

Mr. Frank M. Alexander
Vice Chairman
Ohio River Basin Commission
Fourth & Walnut Building
Cincinnati, Ohio 45202

Dear Mr. Alexander:

A review of the draft report "The Ohio River Basin, The Regional Water and Land Resources Plan" which was transmitted on September 22, 1978, has been completed. I have no additional comments, other than those which have already been incorporated into the draft, and recommend adoption by the Commission.

Sincerely,

Leo Weaver

Leo Weaver

An interstate agency representing Illinois · Indiana · Kentucky · New York · Ohio · Pennsylvania · Virginia · West Virginia

COMMISSION DOCUMENTS

A. OHIO RIVER BASIN COMMISSION ANNUAL REPORTS, 1971 to present.

*B. OHIO RIVER BASIN COMMISSION POLICY MANUAL.

C. OHIO RIVER BASIN COMPREHENSIVE COORDINATED JOINT PLAN (CCJP):

*1. Allegheny River Basin CCJP Summary, July 1977.

2. Monongahela River Basin CCJP, July 1975.

3. Upper Ohio Main Stem CCJP, October 1978.

4. Muskingum River Basin CCJP, October 1976.

*5. Kanawha River Basin CCJP, July 1977.

6. Scioto River Basin CCJP, July 1977.

*7. Big Sandy/Guyandotte River Basins CCJP, January 1977.

8. Great Miami River Basin CCJP, April 1977.

9. Middle Ohio Main Stem CCJP, October 1978.

10. Kentucky/Licking River Basins CCJP, April 1977.

11. Green River Basin CCJP, April 1977.

12. Wabash River Basin CCJP, April 1977.

13. Cumberland River Basin CCJP Summary, July 1978.

14. Lower Ohio Main Stem CCJP, October 1978.

15. The Ohio River Basin, January 1979.

16. Priorities Reports, 1972 to present.

D. LEVEL B STUDY REPORTS:

*1. Wabash River Basin, 1971.

*2. Kanawha River Basin, 1971.

3. Monongahela River Basin, July 1975.

4. Ohio Main Stem, October 1978.

*5. Allegheny River Basin Plan of Study, July 1977.

6. Cumberland River Basin Plan of Study, July 1978.

E. OTHER REPORTS:

*1. The Ohio River Basin Comprehensive Survey, 1971.

2. Water Oriented Environmental Corridors, April 1973.

*3. Inventory of Water and Related Land Studies within the Ohio River Region, August 1973.

4. Guide to Federally-Assisted Water and Related Land Programs, January 1975.

5. Water Resources Assessment of Emerging Coal Technologies in the Ohio River Region, September 1977 (Draft).

6. 1975 National Assessment, Ohio River Region, April 1978.

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* Out of print; limited copies available.

F. REPORTS PREPARED SPECIFICALLY FOR THE ORBC:

This list contains only the Commission-sponsored studies used in the development and updating of the CCJP. Copies of these documents are available for review in the ORBC offices.

1. Revised Basinwide Project Priority Assignments, Ohio River Basin Commission, Environmental Control Corp., April 1972.
2. Monongahela River Basin Principles and Standards Analysis, Gannett Fleming Corddry & Carpenter, Inc., December 1974.
3. Water Quality Index Assessment for the Ohio River Basin, Environmental Quality Systems, Inc., 1977.
4. The Relation of Water Resources and Energy Requirements in the Ohio River Basin, Clarence W. Klassen, 1975 (Draft).
5. Development of Coefficients for Projection of Self-Supplied Industrial Water Demand, (Kentucky), W. E. Gates & Assoc., Inc., June 1976.
6. Water Use Projections for Selected Indiana Counties, Howard Needles Tammen & Bergendoff, August 1976.
7. Assessment of Water Quality for the Ohio Main Stem, Ohio River Valley Water Sanitation Commission, March 1977.
8. Ohio Environmental Needs Study, Labrenz & Assoc., Inc., April 1977.
9. Land Use and Gross Soil Estimates, Ohio River Basin, 1969 and 2000, Economic Research Service, U.S. Department of Agriculture (in cooperation with the Soil Conservation Service), May 1977.
10. Effect of Loss of Valley Storage in the Cannelton Pool on Ohio River Flood Height, U.S. Army Engineer Waterways Experiment Station, June 1977.
11. The Ohio River Wetlands Study, Clyde E. Williams & Assoc., Inc., June 1977.
12. Forest Land of the Ohio Main Stem, Forestry Sciences Laboratory, Forest Service, U.S. Department of Agriculture, July 1977.
13. National Coal Utilization Assessment Pilot Study: Energy Demands in the Ohio Main Stem, Oak Ridge National Laboratory, April 1977 (Draft).
14. Analysis of Structural and Non-Structural Flood Plain Management Alternatives for Stewarts Creek Watershed, Hopkins County, Ky.; Upper Hocking Watershed, Fairfield, Ohio; and Little Grave Creek Watershed, Marshall County, W.Va., U.S. Department of Agriculture, March 1978.
15. Special Study, Little Miami River, Milford, Ohio, Louisville District, Corps of Engineers, U.S. Department of the Army, March 1978.
16. An Analysis of the Effects of Energy Production on the Standard of Living of People in the Ohio River Basin, Dr. Lee Guernsey, Indiana State University, August 1977.
17. Flood Damage Reduction Study, Ohio River at Augusta, Kentucky, Huntington District, Corps of Engineers, U.S. Department of the Army, December 1977 (Draft).
18. Ohio River Flood Profiles, Ohio River Division, Corps of Engineers, U.S. Department of the Army, January 1978.

G. DOCUMENTS USED IN THE DEVELOPMENT OF THE CCJP:

Space does not allow for acknowledging the long list of specific state, federal, local, and other resource materials used in the development of the CCJP. General types of plans and reports are listed below.

1. State: Water Plans

   Water Quality Management Plans (Sections 208/303(e), PL 92-500)

   Comprehensive Outdoor Recreation Plans (SCORP)

2. Federal: Department of Agriculture
   - Watershed Progress Reports (by state)
   - National Forest Management Plans
   - Type IV Survey Reports
   - Soil and Water Conservation Needs Inventories (by state)

   Department of the Army (Corps of Engineers)
   - Water Resources Development Reports (by state)
   - Level C Studies and Reports
   - Development of Water Resources in Appalachia (Office of Appalachian Studies)

   Department of Commerce
   - OBERS Population and Economic Projections, Series C and E

   Department of Energy
   - Energy Projections

   Environmental Protection Agency
   - Municipal Waste Facilities Inventory and Waste Facilities Needs Data (by state)
   - Research Reports

   Department of Housing and Urban Development (Federal Insurance Administration)
   - National Flood Insurance Program - Status Reports of Communities Participating

   Department of the Interior
   - Water Resources Data (by state) (Geological Survey)
   - National Registry of Natural Landmarks, Historic and Archaeological Sites (National Park Service)

3. Local: Local and Regional Comprehensive Development Plans

4. Other: Ohio River Valley Water Sanitation Commission
   - Municipal and Industrial Waste Treatment Compliance Status Inventory

   Appalachian Regional Commission
   - Coal Mine Drainage Abatement Reports

These and numerous other documents and resource materials, presented to the Commission by its members, were considered in the development of the CCJP.

for further information:

Ohio River Basin Commission
36 East Fourth Street, Suite 208
Cincinnati, Ohio 45202

(513) 684-3831